



photo by Koraley Northen

President's Comment

As part of our family, you probably already know about the work the Garden does to preserve biodiversity around the world, discovering and conserving some of Earth's most precious species. It's also important, however, to look closer to home and remember that we share the space in which we live with other organisms.

Urbanization as we know it leads to biodiversity loss, and the loss of biodiversity leads to a reduction in ecosystem services. This is why the Garden launched *BiodiverseCity St. Louis*, a new community initiative to promote, protect, and plan for biodiversity and its conservation throughout the Greater St. Louis region (see page 8).

This initiative brings together all the great conservation work being done by many individuals, organizations, and institutions in St. Louis, including Garden researchers who just completed the *Flora of Missouri* (see page 4) as well as the Shaw Nature Reserve staff, who were recently recognized for their outstanding conservation efforts (see page 4) and are currently working on another landmark native restoration project (see page 12). We're proud of our leadership in the fields of environmental education and biodiversity conservation. It is fitting that the initiative's goal is to help enrich and preserve life, which is also part of our mission.

The Garden wouldn't be the world-leading institution it is today without its staff, volunteers, and members. Thank you making this another exciting year—starting with the **Foodology: Dig In!** celebration of edible plants and capping off with our first-ever Garden Glow. We look forward to many more great memories to be made in 2014!

Peter Wyse Jackson

Dr. Peter Wyse Jackson,
President

As a Garden member, did you know:

- You receive reduced pricing for special events?
- You can enjoy evening walking hours on Tuesdays in the summer?
- You receive free admission for two adults and all children ages 12 and under to the Shaw Nature Reserve and Sophia M. Sachs Butterfly House?
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Garden Hours
The Garden is open 9 a.m. to 5 p.m. every day except during holiday hours (November 23 through January 5) when it closes early at 4 p.m. Closed on Christmas Day.

General public outdoor walking hours begin at 7 a.m. Wednesdays and Saturdays.

General Admission
$8 ($4 for residents of St. Louis City and County); children 12 and under are free. Garden members receive free admission (based on level).

Children's Garden: $5 for children; adults admitted free. ($3 for Garden member children.) Member children admitted free on Tuesdays. Open April through October.

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On the Cover:
Garden Glow's Illumitron. The iconic Climatron® lights up at night as the Garden prepares for its first-ever winter light display. To learn more, visit **www.mobot.org/glow**. Photo by Dilip Vishwanat.

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photo by Christina Kelley

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To discover and share knowledge about plants and their environment in order to preserve and enrich life.

– mission of the Missouri Botanical Garden

News

New Trustees Elected

Josephine Weil and Robert M. Williams Jr. were elected to the Garden's Board of Trustees at the September meeting.

Josephine Weil is a philanthropist, volunteer, and expert gardener. She and her husband, Richard, support many organizations in our community, including The Hope Center, St. Louis Art Museum, Jazz St. Louis, the Missouri History Museum, the Muscular Dystrophy Association, and Washington University.

Robert Williams is the Chief Executive Officer of Williams Patent Crusher Company, a 140-year-old, privately held company located in St. Louis. Williams earned his B.S. in Engineering at the University of Missouri–Rolla. He also serves on several other boards in our community, including the Saint Louis Zoo, Saint Louis Science Center, and National Association of Manufacturers.

Garden Publishes Final Flora of Missouri Volume

Researchers at the Garden published the third and final volume documenting the flora of the state of Missouri, *Steyermark's Flora of Missouri, Volume 3. Dicots, Fabaceae (second part) through Zygophyllaceae*. The 26-year project, a collaboration between the Garden and the Missouri Department of Conservation, provides a comprehensive guide to the state's flora, including notes on taxonomy, distribution, plant uses, and conservation concerns for each species. "The Garden has a wonderful reputation for its international science programs, but the completion of this work demonstrates an equally important commitment to the plant species that surround us here in Missouri," says Garden President Dr. Peter Wyse Jackson.

Garden Curator Dr. George Yatskievych, project director and author, says it's a tool for botanists, conservationists, planners, and gardeners. It will also serve as a guide for another Garden project, the Seed Bank. "The success of the Seed Bank hinges on our ability to correctly identify the plant species we encounter in the field," says Dr. Ginger Allington, Seed Bank manager. "This book will be an asset to this project because it provides up-to-date and detailed information on the most important plant families in Missouri."

SNR Staff Receives Conservation Award

The St. Louis Audubon Society presented its 2013 Outstanding Conservationist Award to the staff at the Shaw Nature Reserve and its director, John Behrer, during its annual dinner October 20. The award recognizes the Reserve's decades-long effort to restore natural areas. "Given who we are and what we do, we try to recognize organizations and people who have had a positive impact particularly on bird habitats," says Mitch Leachman, Executive Director of the St. Louis Audubon Society. "We are huge fans of Shaw Nature Reserve and have been watching it transform, from the glades to the wetlands and prairies, over the years."



Mitch Leachman of the St. Louis Audubon Society (right) presented the Outstanding Conservationist Award to John Behrer (left) and his staff. (photo by Margy Terpstra)

Young Friends Council

Starting in 2014, all the revenue from the events organized by the Young Friends of the Garden will be allocated to support the Doris I. Schnuck Children's Garden through 2018. The funds will help support the Children's Garden educational programs and general operations. "The Young Friends Council is excited to partner with the Children's Garden," says Chris DeFabio, Council Chair. "Our active group of young professionals will better enable the Children's Garden to offer visiting families a more enriching experience."

As part of their commitment to promoting the Garden and its mission, the Young Friends of the Garden also helped raise funds for the historic east wall renovation that started this year. Events like Trivia Night, Tulip Trot, and Fest-of-Ale contributed more than $30,000 to the renovation project.

MyGuide to the Garden

Every visit to the Garden represents a new opportunity to discover something you didn't know about plants and how they're connected to our lives. Because one size rarely fits all, the Garden has launched MyGuide to the Garden, a new initiative made possible by a generous grant from Maritz Holdings, Inc. that consists of tours tailored to each visitor's interests—from what's in bloom and inspiring landscapes to art and history and plant research. "MyGuide to the Garden serves as a gateway to deepen personalized learning among visitors by offering them the opportunity to select from ready-to-go themed tours or create a completely unique and personal experience based on their own interests and curiosities," says Jennifer Wolff, Interpretation Manager at the Garden.

The initiative launched this fall with a new visitor information station located in the Ridgway Visitor Center. Here, guests are invited to explore the Garden in a concierge-like experience, selecting special-interest tours and picking up informational brochures. Through interactive touch screens, guests can explore more tour options and print special interest tours. Visitors who would like to plan their visit ahead of time can do so online at **www.mobot.org/myguides** and print their tours. "Visitors have told us that these tours have sparked conversations among their group, offered them new perspective on their special areas in the Garden, and guided them to explore a new route as they're walking through the Garden," says Wolff. As more tours are added, you can look forward to experiencing the Garden in new ways every time you visit.



At the new visitor information station, MyGuide to the Garden offers visitors themed tours tailored to their specific interests, including Global Gardens, Henry Shaw's Garden, and more. (photo by Amanda Beal)

Research on Tree Diversity in Amazonia

After a few decades studying 6 million km^2 of Amazonian lowlands and their mean tree density, scientists have concluded that there are approximately 16,000 tree species in the area, and more strikingly, that only 227 species account for half of the total. Garden scientists are among the 120 authors of a paper recently published in the journal *Science*.

The study has deep conservation implications for the largest tropical rainforest in the world. Conservation becomes more challenging when such a large percentage of the tree flora is considered rare or endangered—some of the tree species have as few as 1,000 individuals—explains Dr. Peter Jørgensen, Curator at the Garden and one of the study's 24 authors with ties to the Garden. However, knowing that a small number of species accounts for such a large percentage of the total population simplifies research in biogeochemistry and ecology. "There is still a lot of work to be done," Dr. Jørgensen says. "This study enlightens the broad implications of conservation and points us in the right direction."

Flora of North America Receives Grant

The Flora of North America Association received a one-year grant from the David and Lucile Packard Foundation earlier this year. The $250,000 gift will ensure the completion and publication of at least three volumes (Vols. 6, 9, and 28) next year, says Dr. James Zarucchi, Editorial Director for the project, which has its main editorial center at the Garden. Out of the 30 planned volumes for this effort, 16 have been published over the past 20 years.

News cont.

Conservation Geneticist Joins the Garden



Dr. Christine Edwards has joined the Garden as the new Conservation Geneticist. Scientists in this field analyze genetic threats—inbreeding, genetic drifts, genetic bottlenecks—that can affect a species' survival. These threats can result in reduced genetic diversity, which in turns reduces an organism's ability to reproduce or respond to environmental changes.

As the Garden's first conservation geneticist, Dr. Edwards will also work with the Garden's plant collections, which include endangered species. "Dr. Edwards has the ideal set of skills and experience we need to develop this new program," says Olga Martha Montiel, Vice President of Conservation and Sustainable Development. "She will not only provide another key element in our conservation efforts but also help us interpret and develop our existing living collections."

The Garden is currently building the new DNA lab, where Dr. Edwards hopes to collaborate with fellow scientists and provide educational opportunities for students. And while her work will mainly focus on rare and endangered species, it will also help prioritize genetic collection for other projects such as the Garden's Seed Bank. "It's great to be at an institution that focuses on plants and cares about plants," she says.

Researchers Propose Assisted Migration

Garden researchers presented a plan to assist plants that need to migrate to adjust to climate change at the Ecological Society of America conference in Minneapolis in August and the 5th Global Botanic Gardens Congress in New Zealand in October. "This proposal is the first of its kind, calling all botanical gardens around to world to participate in this undertaking," says Olga Martha Montiel, Vice President of Conservation and Sustainable Development.

Garden ecologist Adam Smith proposed that botanical gardens are the ideal candidate for transferring plants that need assistance migrating to areas that better suit their needs as the changing climate continues to threaten their survival. "Botanical gardens already move species around, although not in a coordinated fashion that takes climate change into consideration. Managers at the gardens have the horticultural expertise to provide ongoing screening for invasiveness," he says.

Raven to Head Climate Change Initiative

President Emeritus Dr. Peter H. Raven will head the Climate Change Initiative launched by Washington University in St. Louis this summer. The initiative will focus on research, education, and public awareness of global climate change. "I am delighted to coordinate the effort," says Dr. Raven, who is also the George Engelmann Professor of Botany Emeritus at the university. "Needless to say, climate change is extremely important for the future of plants as well, and I know that our Garden scientists will be involved in various ways as the initiative moves forward." To learn more, visit **sustainability.wustl.edu**.



Named in Prince Albert's honor for his conservation work in Madagascar, a framed *Exacum alberti-grimaldii* was presented by Dr. Wyse Jackson. (photo courtesy of UMSL)

Prince Albert Receives Award at the Garden

The Whitney R. Harris World Ecology Center at the University of Missouri–St. Louis presented the World Ecology Award to His Serene Highness Prince Albert II of Monaco. The ceremony, held at the Garden on September 22, celebrated the prince's efforts to promote environmental and ecological ideals around the world through the Prince Albert II of Monaco Foundation.

At the ceremony, Garden President Dr. Peter Wyse Jackson presented the prince a framed specimen of *Exacum alberti-grimaldii*, a rare species from northern Madagascar described by Garden curator Dr. Martin



Brought together by their love for gardening, many St. Louis Master Gardeners gathered at Faust Park in September to celebrate the program's 30th anniversary. (photo by Jill Setlich)

Callmander and named in the prince's honor for his foundation's conservation work there.

The Whitney R. Harris World Ecology Center is a longtime partner of the Garden's Center for Conservation and Sustainable Development as well as the Wildcare Institute at the Saint Louis Zoo.

St. Louis Master Gardeners Celebrate 30 Years

If you've ever called the Garden's Horticulture Answer Service or visited the Plant Doctor desk, you can thank the St. Louis Master Gardeners for all the information and guidance they provided. Established by the Missouri Botanical Garden and in partnership with the University of Missouri Extension, the St. Louis Master Gardener program established a network of volunteers who provide horticultural education and outreach throughout the community.

The program, which celebrated its 30th anniversary in September, started with the Garden's Answer Men—now the Horticulture Answer Service—and now has more than 320 active members who contribute approximately 36,000 hours of volunteer work each year.

Master Gardeners come from different walks of life, but they all have one thing in common: love for gardening. "We're all kindred spirits," says Jan Gowen, a microbiologist who became a Master Gardener 10 years ago. "You don't have to have a horticulture background to love gardening and become a Master Gardener." To learn more about the program, visit **www.stlmg.com**.

RainScape Rebates

Want to learn about sustainable practices that relieve rainwater-related problems while improving biodiversity? Check out the RainScaping Guide online and enter for a chance to win great prizes, including $500 in native plants at the Shaw Wildflower Market in May—just in time for spring planting! Simply fill out the survey at **www.mobot.org/rainscaping** before February 12. And if you live within the Deer Creek watershed, you can also apply for up to $2,000 in rebates for your project.

Grow Your Own EDIBLE GARDEN

by Elizabeth Spiegel and Jennifer Laquet
Missouri Botanical Garden's edible garden experts



photo by Andrew Dolinky

General Tips

- Research, write down, and map plants for your new garden.
- New seed and nursery catalogs become available in January. Order your seeds early in winter because popular varieties could sell out.
- Test the germination rates of last year's seeds before ordering new ones. Wrap 10 seeds from the previous year in a moist paper towel. Keep seeds damp and warm for a week. If fewer than half of the seeds sprout, order new seeds for your garden.

Plants

- Starting in February, onion, celery, celeriac, broccoli, cauliflower, Brussels sprouts, and cabbage seeds can be sown indoors and ready for transplanting by March.
- If you are starting seeds indoors for spring, be sure to use sterile growing mediums and clean pots or trays to prevent disease. Wash plug trays or pots in bleach water if you are reusing them.

Maintenance

- Clean and oil all garden hand tools before storing them for the winter. Repair and sharpen tools.
- If you are storing bulbs, rhizomes, or tubers to replant in spring, check them during winter and dispose of those that are diseased or damaged.

Don't forget to check out the "Your Garden" section at **www.mobot.org.**

BIO DIV ERSE CITY

Rethinking urban and suburban life

By Sheila Voss, Vice President of Education; Deb Frank, Vice President of Sustainability; and Jean Ponzi, Green Resources Manager



photo courtesy of St. Louis Convention & Visitors Commission

When someone asks you to describe "nature," what images come to mind? A national park vista? A wild animal? A favorite local park? Perhaps the Missouri Botanical Garden? Do you think of the plantings in a parking lot median, the highway swaths of grasses and wildflowers, or the lawns surrounding your school or office? While the latter may not be postcard-perfect ideas of the natural world, a diversity of life forms fills these common places.

Biodiversity is in our back yards, schoolyards, corporate campuses, city streets, parking lots, roadside berms, and balconies. Our biodiverse neighbors live in the soil underfoot and in the street tree canopy overhead. They clean and cool our air, prevent our streets from flooding, remove toxins from our soil, and provide sustenance for people and all kinds of wildlife.

BiodiverseCity St. Louis, a new Garden-led initiative, was launched in May to celebrate, protect, and restore these important natural communities. This bi-state collaboration aims to increase local species and habitat diversity and reverse conditions contributing to biodiversity loss through research, public education, policy, and action projects.

Urban roots, global impact

Garden President Dr. Peter Wyse Jackson took notice of urban wildlife in his native Dublin a few decades ago. This eventually lead to his first book, *The Flora of Inner Dublin*, and his participation in a Biodiversity Action Plan for Ballymun, an impoverished, high-crime area on Dublin's northside that now has several programs focused on biodiversity, including school-area clean-ups and wildlife counts, organic gardening programs, and abandoned space restorations. "While field research remains essential, work in urban areas is increasingly vital to long-term biodiversity conservation," says Dr. Wyse Jackson. "When cities start considering landscape plants as a form of green infrastructure, significant benefits can result such as improved public health and livability, reduced expenses, and increased awareness of how reliant we are on local and global biodiversity as our life support system." Informed and inspired by Dr. Wyse Jackson himself, as well as by mounting evidence linking urban biodiversity with healthier, safer, and more prosperous communities, *BiodiverseCity St. Louis* is all about growing a stronger community.

Why urban biodiversity?

While likely not the subject of dinner-table conversation, biodiversity drives our economies and makes life as we know it possible. Regrettably, the increasingly rapid, large-scale global extinction of species in the past century has occurred at a rate a thousands times higher than the average rate during the preceding 65 million years. As the number of species declines, so does the ability of ecosystems to effectively function. The vast majority of the world's biological diversity is found in a handful of tropical and subtropical countries, and Garden researchers and conservation experts are already working in many of these places to safeguard at-risk plants, people, and places. But an urban focus is critical too. Cities occupy just 2 percent of the Earth's surface, yet their inhabitants use 75 percent of the natural resources. Healthy ecosystems and biological diversity are vital for communities everywhere to function properly. "Activity to increase biodiversity in the urban core is a great opportunity to engage more people as good stewards of the earth while improving the quality of urban life," says Catherine Werner, Sustainability Director for the City of St. Louis.

Cities occupy 2% of Earth's surface, yet their inhabitants use 75% of the natural resources.

Who is involved?

In many ways, biodiversity is already a regional concern. Biodiversity outcomes are cited throughout both the City of St. Louis Sustainability Plan and the East-West Gateway Council of Governments' OneSTL Regional Plan for Sustainable Development. At the *BiodiverseCity St. Louis* summit in May at the Garden, more than 70 attendees represented local governments, corporations, nonprofit organizations, universities, and citizen groups, and dozens more have since joined.

By design, *BiodiverseCity St. Louis* embraces and promotes existing projects and programs already underway. Garden researchers recently completed the *Flora of Missouri* (see page 4). A Seed Bank was established at Shaw Nature Reserve. The Deer Creek Watershed Alliance RainScaping program puts plants to work to manage stormwater. Gateway Greening strengthens neighborhoods by growing gardens. The Academy of Science–St. Louis's BioBlitz trains citizens to monitor biodiversity. The St. Louis Audubon Society helps homeowners transform backyards into bird and butterfly habitats. Through the St. Louis Green Business Challenge, companies are integrating biodiversity with other sustainability practices (see sidebar). The list goes on. *BiodiverseCity St. Louis* aims to shine a deserving light on these important programs and unify them under a broader reason for being: transforming St. Louis into a thriving, healthy, vibrant eco-region that values biodiversity and serves as an urban model for the nation and the world.

What's next?

Learn more by visiting **www.biodiversecitystl.org**. Check out the different organizations that are already working toward this goal, get informed, and get involved!

Green Means Business

by Jean Ponzi
Green Resources Manager, EWC



The Garden's EarthWays Center (EWC) has added a biodiversity component to the Green Business Challenge, a program of the St. Louis Regional Chamber. As resource advisors, the EWC developed a "Better Business through Biodiversity" scorecard to guide companies in evaluating biodiversity factors on and around their property. During a Garden seminar in March, representatives from 21 participating companies and nonprofits launched this effort.

A diverse group of businesses is already engaged. Graybar Electric has reduced labor and watering costs by replacing conventional turf with a native wildflower seed mix. Lambert St. Louis International Airport has established a beekeeping partnership. Kozeny-Wagner is developing a virtual tool to help site planners visualize biodiversity options. Constructed wetlands contain stormwater runoff and beautify walking trails on the Maritz corporate campus.

The scorecard expands upon the companies' ongoing integration of sustainable thinking, planning, and budgeting into daily business practices. The EWC is building workplace awareness of biodiversity issues and connecting them to energy and water conservation, waste reduction, and other sustainability efforts.

Foodology for Schools: Let's Grow!

By Sheila Voss, Vice President of Education













photos by Michelle Sherer

Our region's food story is diverse in many ways. Our iconic foods are legend. Our urban, suburban, and rural mix of communities is home to everything from mega-farms to community gardens. Our farmers' markets are numerous and growing. But like many other large cities, our food story isn't without flaws. Many of our neighborhoods remain vast food deserts—areas where healthful, affordable food is difficult to obtain. We have a portion of our population either struggling with poor nutrition and obesity or living in hunger.

Then there is the topic of food in schools. Across the region, local schools are finding fresh, innovative ways to serve up healthier, more sustainable foods. Some host in-school food pantries to support low-income families. Others grow their own food with student- and parent-maintained school gardens. Others are eliminating deep fryers, trans fats, and white bread. Yet processed foods remain staples in the majority of schools.

As members of this community, many of us at the Garden felt we could do more to influence healthy food in schools, with a special emphasis on plants. Without plants, of course, there is no food. Every day, we celebrate plants as food from botanical, nutritional, historical, geographical, and cultural perspectives. As a leader in sustainability, the Garden also educates people on how to grow more of their own food and become wiser consumers about what they eat.

With this goal in mind and in collaboration with Gateway Greening and the Academy of Science–St. Louis, the Garden organized a regional school summit in July. The first of its kind in the area, the Foodology for Schools: Let's Grow! summit challenged all in attendance with a central question: How can we as educators, parents, and community partners nourish ourselves and our children in healthier, more sustainable ways?

More than 130 district leaders, educators, school gardeners/groundskeepers, food service professionals, nutritionists, parents, and teens from 20 school districts participated. The two-day summit featured keynote speakers, case studies, a film screening, field trips to school gardens, and idea-sharing/planning time for questions such as: Where does your school's food come from? What should the cafeteria menu look like in the future? How are parents engaged?

Inspired by the summit's success, the Garden plans to convene more community-wide events like this in the future. To learn more and download the summit's resource guide, click on Teacher Professional Development at **www.mobot.org/schoolprograms**.



If you missed their fall migration this year, don't miss the monarch butterflies in the conservatory this holiday season for Winter Jewels. (photo by JJ Mueller)

Regal Guests for the Holidays

By Chris Hartley, Coordinator of Education Programs

Winter Jewels
A HOLIDAY CELEBRATION

November 29–January 5, 9 a.m. to 4 p.m., Closed Mondays, Christmas Eve and Day, and New Year's Day
Butterfly House

This holiday season, enjoy the warm temperatures inside the tropical conservatory as you marvel at the monarch butterflies and other "jewel" insects. Included with Butterfly House admission.

ATTENTION

The Butterfly House will be closed January 6–31.

This holiday season, experience beautiful monarch butterflies in the conservatory as part of our second annual Winter Jewels: A Holiday Celebration.

Monarchs are best known for their incredible fall migration from Canada to Mexico. In Missouri, they can be seen from late spring to early fall. While their journey through North America every year is well known, many people do not realize these butterflies are also native to tropical regions of Central and South America. They can also be found in Hawaii as well as parts of Australia and Southeast Asia.

The Winter Jewels monarchs will come from El Bosque Nuevo, a butterfly conservation organization in Costa Rica that has been a Butterfly House partner since 2007. Because these monarchs are native to Costa Rica, they will not have the instinct to migrate. They will happily live out their lives in our conservatory, even though their friends from Missouri have long since flown south.

As caterpillars, monarchs feed from milkweeds, genus *Asclepias*. Tropical species of milkweed are sometimes given the common name "bloodflower," while native species are commonly known as "butterfly weed." Visitors will find milkweeds in the spring, summer, and fall planted in our outdoor gardens, which helps migrating monarchs as they pass through our region. As part of our education mission, we endeavor to show our guests the beauty of milkweeds and other wildflowers while also educating the community about their importance to butterflies and other wildlife.

In addition to monarchs, the event will spotlight other insects such as mounted jewel beetles and jewel wasps. And don't miss your chance to get up close and personal with our live animal encounters. For more information about Winter Jewels, visit **www.butterflyhouse.org**.



The goal of the Pinetum restoration is to remove the existing non-native conifers and create a native landscape of open woodlands with swaths of diverse prairie (above).

Restoring Natural Beauty

The Shaw Nature Reserve has been working for more than three decades on restoring its different ecosystems to their native state. Today, more than 1,200 acres—glades, prairies, woodlands, and wetlands—are managed as native habitats. A concerted effort has been made to control invasive species and to implement management practices in ecologically important areas. The Reserve also offers programs and events that help connect people to the natural world and the importance of diverse native habitats, including the Native Plant School (see sidebar) and Prairie Day.

With continued support from the Trulaske Foundation, the latest major restoration project, the Pinetum, began this summer and is expected to be completed in the spring of 2014. This 55-acre site includes the Pinetum Lake, the Nature Explore Classroom, and the area leading to the Whitmire Wildflower Garden and Bascom House. It was first developed in 1925 as part of the original master plan to include more formal gardens, orchards, pathways, and greenhouses. Although these plans were never developed, the Pinetum Lake was created as a landscape feature and a water reservoir for the greenhouses. Conifers from all over the world were then planted to test their hardiness to the St. Louis climate. Over the years, however, more than half of them died, allowing invasive species to take over.

The restored area's wide selection of native plants will provide a habitat for a more diverse animal life. New water retention ponds will help control stormwater and create a wetland ecosystem while also reducing soil erosion. The Nature Explore Classroom will undergo upgrades as well, including the removal of invasive species to improve the existing trail and the construction of a small wetland area.

True to the Reserve's mission, this site will showcase native plant communities in natural landscapes. Visitors will enjoy strolling through many corridors and shady spots, where they can picnic or just relax and take in the beauty of the natural surroundings. Most importantly, it will be an example for others in the region trying to accomplish similar ecological restorations, inviting visitors of all ages to learn more about the important role native species play in conserving biodiversity.

Native Plant School: RainScaping Fundamentals

Thursday, February 6,
1 to 4 p.m.
Shaw Nature Reserve

What do rock weirs, compost filter socks, bioswales, and rain barrels have in common? Find out what, exactly, the term "rainscaping" refers to, why it's important in the St. Louis region, the basics of what you can do at your own home, along with numerous resources at your fingertips! Designed for adults only. Registration required: $12 for Garden members; $15 nonmembers. Register at **www.mobot.org/classes**.

See page 7 for rainscaping prizes and rebates.

Tributes

July through September 2013. A tribute gift to the Garden is a wonderful way to honor family and friends. Tributes of $25 or more are listed in the *Bulletin*. If you have questions regarding giving opportunities at the Garden, please call (314) 577-0805. You can also make a tribute gift online at our website, **www.mobot.org**.

In Honor of

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Mr. and Mrs. Jules L. Pass

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Ms. Carolyn Downs
Most Fabulous Book Club



Sophia M. Sachs Butterfly House Tributes & Pavers

Tributes and Pavers dedicated at the Butterfly House July through September 2013. To learn more, call (314) 577-0805 or visit **www.butterflyhouse.org**.

Tributes

In Honor of

Mrs. Margaret P. Moehlenbrock
Ms. Jackie Juras

In Memory of

Tina Buddemeyer
Ms. Janie Shay

Mrs. Iva "Skippy" A. Wheelis
Mr. David Heppermann
Mary Lou Michler

Pavers

Pauline Baganoff
AWW Book Club

Charlie Bear
The EM Attendings and Residents

Gus Berry
Grandma and Grandpa Bushold

Arthur F. Dobson, Jr.
Fifth Third Bank

Kethan Doshi and Kriya Doshi
Ammamma and Tatayya

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Mr. James Canning

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Deb and Charlie Butler
Sue Hawkins
Cindy Gorham
Jristen Cagle

Betty Russell
The Guys

Mr. Peter J. Sharimitaro
Mona, Roxie, and Robin Gonzalez

Bette Tonkins
Nancy Tonkins

Give To The Henry Shaw Fund

Your Garden membership supports a historic and beloved cultural center with a world-changing scientific mission. You make a difference! We invite you to make an even greater difference by contributing to the 2013 annual appeal.

Ways to give:

Send a check using the enclosed tribute envelope, call (314) 577-5118, or visit **www.mobot.org/henryshawfund**.

Members' Entry Court

Bricks dedicated at the Garden July through September 2013. Engraved bricks are a wonderful way to commemorate any special occasion, as well as final memorials. For additional information regarding the Garden's brick program, please contact the Institutional Advancement Office at (314) 577-0805 or visit **www.mobot.org/donate**.

Signature Bronze Bricks

Marilyn L. Francis
Mr. Robert A. Francis

Mr. George Malich
Ms. Jennifer J. Salci

Rita A. Orr
Mrs. Judy Thompson

Wendy Parrish
Jamie Parrish Howells

Jeanine Marie Prickett
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Paul, Cyrena, Kelly, and Maddox Gerson
Sanford and Phyllis Goffstein
Mrs. Alice R. Goodman
Mrs. Maxine Hirsch
The Kindergarten Team
The Lincoff family and the Willmann family
Ms. Meghan Mazzuca
Ms. Caroline Miller and Ms. Susan Miller
Sara Strouts and Steve Strouts
Russ Sturgis
Mrs. Sarah Teague Gerson and Ms. Morgan Teague
Ms. Shirley Vaughn and Mr. Phillip Smith
Ms. Nancy Yount

Engraved Clay Bricks

Mr. John J. Altman
Mrs. Carolyn Altman

Theresa and Sal Ciccolella
Mr. and Mrs. Sal Ciccolella

Mariann Dorothy Fitts
Sue Pennycook

Don and Pat Gee
Mrs. Patricia J. Gee

Robert and Lorene Hutton
Diane Hutton Palumbo

Irving J. Londy
Kate Kimelman and Meg Selig Carr

Margaret F. Londy
Kate Kimelman and Meg Selig Carr

Mike and Janet McKeon
Janet and Michael McKeon

H. Petrie Mitchell
Harley and Ronnie Smith

Ms. Betty Schone
Michael Bottros, MD
Beverly J. Field, PhD
Lesley Rao, MD
Rahul Rastogi, MD
Robert A. Swarm, MD
Xiaobin Yi, MD

Nancy Jo Teague
The Girls

Zeta Beta Chi Sorority
Zeta B. Chi

Seen at the Garden



Dr. David Bramwell, Lelia Farr, and Dr. Peter Wyse Jackson



Garden supporters enjoying the Henry Shaw Dinner

Henry Shaw Dinner

October 2, 2013

Dr. David Bramwell, former Director of the Jardín Botánico Canario Viera y Clavijo in Gran Canaria, Spain, received the 2013 Henry Shaw Medal. Along with Dr. Peter Wyse Jackson, he is one of the founders of Botanic Gardens Conservation International.

(photos by Jill Setlich and Kevin Kersting)



Martin and Janet Schwanze



Rob and Kathy Williams



Mr. and Mrs. Grenville Sutcliffe and daughters Christine and Katherine



Melissa and Phillip Lloyd, Heather Lloyd, Laura and Brian Rothery, and Joe Lloyd



David and Theresa Schulz



Brad Landsbaum, Stephanie Schmidt, Bob Baker, and Amanda Landsbaum

Wing Ding 2013

September 28, 2013

Guest celebrated 15 years of extraordinary innovation at the Butterfly House during the Wing Ding gala with food, cocktails, a silent auction, and live entertainment. The event raised funds to support the Butterfly House's mission.

(photos by Amanda Beal and Kevin Kersting)

Seen at the Garden





Herbalooza

September 11, 2013

More than 150 people joined the St. Louis Herb Society for an herb celebration that included live music, a silent auction, and demonstrations from the herb experts.

(photos by Jill Setlich and Amanda Beal)















Ghouls in the Garden

October 27, 2013

Presented by Macy's.

Kids and their families attended the annual members-only celebration filled with treats, themed photo stations, and costume fun.

(photos by Tom Incrocci and Mary Lou Olson)

Events

Victorian Christmas at Tower Grove House

Wednesday, November 20–Sunday, January 5

See the Victorian country home of Garden founder Henry Shaw decked for the holidays in true Victorian style. Open Wednesday through Sunday, 10 a.m. to 4 p.m. Enjoy storytelling at 11 a.m. and 1 p.m. on Saturdays and at 1 p.m. on Sundays. Included with Garden admission.

Holiday Wreath Auction

Saturday, November 23–Sunday, January 5, 9 a.m. to 4 p.m., Monsanto Hall

Exhibit features unique creations by some of the area's finest floral designers. All wreaths are sold by silent auction bidding, with proceeds benefiting the Missouri Botanical Garden. Closed Christmas Day. Included with Garden admission.

Holiday Trimmings

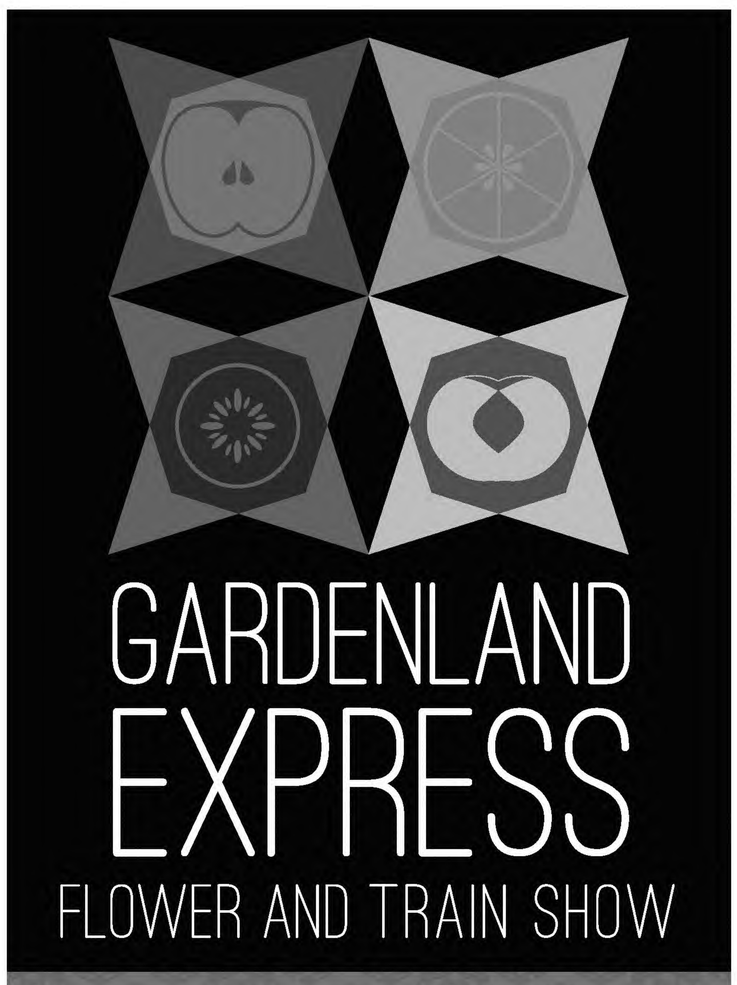
Friday, December 6–Sunday, January 5, Kemper Center

Enjoy a 12-foot balsam fir tree naturally decorated with hand-crafted "gourdaments," which are up for bidding. All proceeds benefit the Kemper Center. Included with Garden admission.

Saturday with Santa: Christmas Carols in the Garden

Saturday, December 14, 1 to 4 p.m., Monsanto Hall

Whisper your Christmas wishes to Santa Claus and listen to festive holiday carols! Included with Garden admission. Admission to the Gardenland Express holiday flower and train show is an additional $5; free for members.



GARDENLAND EXPRESS

FLOWER AND TRAIN SHOW

Gathering for the Feast!

November 23–January 5

Step into a whimsical world of merriment and celebrate the many edible plants that go into our favorite holiday dishes. See fanciful animal friends bring together their grand feast while you enjoy the festive holiday music, beautiful tablescapes, and trains from the Garden's private collection! Admission*: free for members. Closed Christmas Day.

***Nighttime rates apply during Garden Glow.**

Sponsorship support provided by CBIZ & Mayer Hoffman McCann P.C.

Kwanzaa: Festival of the First Fruits

Friday, December 27, Noon to 4 p.m., Ridgway Visitor Center

Kwanzaa is a Swahili term that means "first fruits." This contemporary African-American holiday centers around the feast table of the harvest and highlights a day of storytelling, craft and jewelry displays, and authentic African drumming and musical performances. Included with Garden admission.



GARDEN GLOW

NOVEMBER 23
THROUGH
JANUARY 4

Schedule:
November 23–December 19:
Wednesday–Sunday from 5 to 9 p.m.

December 20–January 4:
Nightly from 5 to 10 p.m.

Dining:
Sassafras café: closes one hour before event close

Café Flora (Spink Pavilion): nightly during Glow except December 5, 6, 7, and 20

Snacks and beverage tents and s'mores stations

Shopping:
Garden Gate Shop open nightly during Garden Glow

Kiosks and merchant tents

Tickets available at
www.mobot.org/glow

or by calling* (314) 492-4331 or 1-855-277-7077 (toll free)

***9 a.m. to 5 p.m. only; phone orders subject to $5 processing fee.**

20% OFF **New, renewed, or gift memberships during Garden Glow evenings** (at the Membership Services Desk only).

Garden Glow Signature Location sponsorship provided by
BMO Harris Bank, Ernst & Young, Lelia and David Farr, and Monsanto.

Special Venue sponsorship provided by
Ameren, Bunge North America, Laclede Gas Company, Maritz Holdings, Peabody Energy, Nicholas and Patricia Reding, Sigma-Aldrich, and UMB Bank.

photo by Charles Schmidt

Events

Supper with Santa

November 30 and December 1, 7, 8, 14, and 15, 4:30 to 7 p.m., Butterfly House

Enjoy a pasta dinner, a picture with Santa, face painting, ornament making, story time, and cookies with hot chocolate. Guests will also receive a commemorative bookmark from the photo booth. $13 members; $18 member children (ages 2 to 12); $15 adults (ages 13 and up); $20 children (ages 2 to 12). Reservations required and space is limited: **www.butterflyhouse.org.**

Corporate Partners Day

Sunday, December 15, 9 a.m. to 4 p.m., and Sunday, February 9, 9 a.m. to 5 p.m.

Employees of the Missouri Botanical Garden's Corporate Partner companies receive free daytime admission for two adults and all children ages 12 and younger to the Garden with a valid corporate ID. Visit **www.mobot.org/corporate.**

Digging In to the Roots of Our Food

Through January 5, 9 a.m. to 4 p.m., Brookings Interpretive Center

This fun, hands-on, interactive exhibit will challenge visitors to explore what they eat in ways that spark curiosity, ignite ideas, and inspire action. Included with Garden admission.

Techniques and Equipment for Photographing Missouri Wildlife

Saturday, January 11, 9 to 11:30 a.m., Shaw Nature Reserve

For all levels. As part of the Shaw Photography Series, published photographer Danny Brown will share his secrets for capturing stunning images of Missouri wildlife. Topics will include camera settings, long lens techniques, use of natural light, camouflage, more. He will also discuss simple post-processing techniques. Participants should be familiar with the use of a digital SLR camera, preferably with 300 mm or longer lens. Designed for adults only. $30 members; $36 nonmembers. Registration required: **www.mobot.org/classes.**



Orchid Show

Saturday, February 1–Sunday, March 23, 9 a.m. to 5 p.m., Orthwein Floral Display Hall

The annual display features hundreds of blooming orchids in a lush, tropical landscape. The Garden maintains one of the world's premier orchid collections, and the Orchid Show is the only time of year when this rotating selection of orchids is available for public viewing. Garden admission plus $5; free for members.

Explore the Magic of Witch Hazels

Saturday, February 22, 10 a.m. to noon, Ridgway Visitor Center

You won't find many shrubs in Missouri that flower when it's snowing, but that's just one of the beautiful aspects of witch hazel, or *Hamamelis*. $25 members; $30 nonmembers. Registration required: **www.mobot.org/classes.**

Valentine's Night Hike

Thursday, February 13 or Saturday, February 15, 7 to 10 p.m., Shaw Nature Reserve

Bundle up and spend the evening under the stars with your sweetheart, friends, or adult family members! Enjoy the wonders of a crisp, invigorating winter night at the Reserve. See the constellations and planets using our telescope (weather permitting) and share hot beverages and delectable desserts after the hike. What a unique way to say "I love you!" Designed for adults only. $24 members; $29 nonmembers. Price is per person. Please dress for the weather. Registration required and space is limited: **www.mobot.org/classes.**

gift of the GARDEN

Finish off your holiday shopping list!

Save 20% on Garden, Garden Plus, and Family-level gift memberships! Visit the Membership Services Desk between 9 a.m. and 4 p.m. December 4 through December 8. *(Discounts apply to on-site sales only.)*

Hot! Hot! Hot!

Saturday and Sunday, February 8 and 9, 10 a.m. to 3 p.m., Butterfly House

Shake off the cold-weather blues and join in fun, tropical-themed activities and crafts that will make you go absolutely buggy! Enjoy live steel drum music, a sandbox, face painting, and a cool treat! Designed for children ages 3 to 8 with their families. Included with Butterfly House admission; free for members.

Save the Date: Trivia Night—Garden Style

Saturday, March 1, doors open at 6 p.m., questions start at 7 p.m., Ridgway Visitor Center

Show how smart you are at the sixth annual Young Friends' Trivia Night—Garden Style. Tables are $300 and seat 10. Complimentary beer provided by Schlafly. Silent auction, raffle, and more! All proceeds benefit the Children's Garden. Reservations required: **www.mobot.org/trivia** or (314) 577-5118.

Save the Date: St. Louis Garden Tour

Sunday, June 8, 9:30 a.m. to 4:30 p.m.

Mark your calendar for this anticipated tour of private gardens in the St. Louis area. This self-guided tour is hosted every three years by the Missouri Botanical Garden. For more information, visit **www.mobot.org/events**.

Children's Garden, Tower Grove House, Brookings Interpretive Center, tram tours, and Terrace Café will reopen March 29, 2014.

photos by Mary Lou Olson, Amanda Attarian, and Christopher Gibbons

Celebrate the Gospel Concert

Sunday, February 9, 3 p.m., Shoenberg Theater

In honor of Black History Month, enjoy soul-stirring renditions of traditional gospel favorites. Seating is limited and available first-come, first-served. Included with Garden admission.



Plant Societies Shows and Sales

Get the latest information about your favorite plant society's show and sale at the Garden by visiting **www.mobot.org/plantsocieties**.

JUST FOR MEMBERS



Breakfast with Santa

Saturday, December 7, 8 to 10:30 a.m., Monsanto Hall

Bring your holiday wish list and visit with Santa as he makes his yearly stop at the Garden for our members-only event. $20 for adults; $15 for children ages 3–12; free for children under 3. Reservations required and space is limited: **www.mobot.org/events** or (314) 577-5118.

Presented by Macy's.

Orchid Show Preview

Friday, January 31, 5 to 8 p.m., Orthwein Floral Display Hall

This special night includes members-only viewing of the 2014 Orchid Show featuring blooming orchids in a South America-inspired landscape. The evening also includes discounts in the Garden Gate Shop and Sassafras, with a cash bar available. Admission is free.

Members Day: Greenhouse Tour

Tuesday, February 11, 10 a.m., Shoenberg Theater

Have you ever wanted to see where all the Garden's plants are cared for before and after being on display on the grounds? This is your chance! Join us for an exclusive look at the Garden's greenhouses. Reservations required and space is limited: **www.mobot.org/events** or (314) 577-5118.

December 2013

average temperature: low 28°, high 43°
average precipitation: 3 in.

What's in bloom?


Poinsettia


Mottled spurge


Camellia


Common rush


Hardy hibiscus

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1 ■ Garden Glow, *through January 4, 2014* ■ Gardenland Express and Holiday Wreath Auction, *through January 5, 2014* ■ Supper with Santa, 4:30 to 7 p.m. $ ☎ BH	2	3	4	5	6 ■ Around the World Wine Dinner, 6:30 p.m. $ ☎	❀ Breakfast with Santa, 8 to 10:30 a.m. $ ☎ MH 7 ■ *Amazing St. Louis* book signing with author Charlie Brennan, 11 a.m. to 1 p.m., GGS
			Gift Membership Sale and Members' 20% Off Sale, through December 8 at the shops			
8 ■ Supper with Santa, 4:30 to 7 p.m. $ ☎ BH	9	10	11	12	13	14 ■ Saturday with Santa: Christmas Carols in the Garden, 1 to 4 p.m., MH ■ *Christmas in St. Louis* book signing with author John L. Oldani, 11 a.m. to 1 p.m., GGS
15 ■ Supper with Santa, 4:30 to 7 p.m. $ ☎ BH ■ Corporate Partners Day, 9 a.m. to 4 p.m.	16	17	18	19	20 ■ Around the World Wine Dinner, 6:30 p.m. $ ☎	21 ■ Great Green Adventures: Tropical Treats, 10:30 a.m. and 1:30 p.m. $ CHD ■ *Herbal Cookery* book signing with St. Louis Herb Society members, 11 a.m. to 1 p.m., GGS
22	23	24 **CHRISTMAS EVE** ■ The Butterfly House is closed.	25 **CHRISTMAS** ■ The Garden and Butterfly House are closed.	26 **KWANZAA**	27 ■ Kwanzaa: Festival of the First Fruits, Noon to 4 p.m., RVC	28
29	30	31 **NEW YEAR'S EVE**				

KEY (All events take place at the Garden unless otherwise noted.)

BH	Butterfly House	KC	Kemper Center for Home Gardening
BHGS	Butterfly House Gift Shop	LS	Little Shop Around The Corner
CA	Cohen Amphitheater	MC	Monsanto Center
CBEC	Commerce Bank Center for Science Education	MH	Monsanto Hall (in RVC)
CHD	Children's Garden	RVC	Ridgway Visitor Center
CL	Climatron lawn	SNR	Shaw Nature Reserve
GGS	Garden Gate Shop	SP	Spink Pavilion
JE	Jordan Education Wing (in RVC)	ST	Shoenberg Theater (in RVC)

Sassafras
❀ Members-only event
20% Member discount at the Garden Gate Shop
☎ Reservations required
$ Fee required



photos by Kevin Kersting, Lisa Francis, and Christine Siebert

January 2014

average temperature: low 24°, high 40°
average precipitation: 2.5 in.

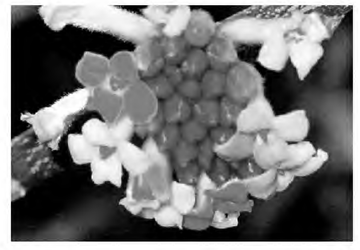
What's in bloom?


Brunfelsia


Clerodendrum


Winter daphne


Sieber's crocus


Paperbush

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
GARDEN GLOW	**LAST WEEK** DON'T MISS IT! **ENDS JANUARY 4** www.mobot.org/glow	LITTLE SHOP AROUND THE CORNER ANTIQUES · HOME & GARDEN FURNISHINGS **Closed All Month**	1 **NEW YEAR'S DAY** ■ The Kemper Center for Home Gardening and Butterfly House are closed.	2	3	4
5	6 ■ The Butterfly House is closed, *through January 31*. **Garden Gate Shop closed**	7	8	9	10	11 ■ Techniques and Equipment for Photographing Missouri Wildlife, 9 to 11:30 a.m. $ ☎ SNR
12	13 **Garden Gate Shop closed**	14	15	16	17 ■ Around the World Wine Dinner, 6:30 p.m. $ ☎	18 ■ Great Green Adventures: Winter Bird Walk, 10:30 a.m. and 1:30 p.m. $ CHD
19	20 **MARTIN LUTHER KING, JR. DAY**	21	22	23	24	25
26	27	28	29	30	31 **CHINESE NEW YEAR** Orchid Show Preview, 5 to 8 p.m., RVC	

photos by Lisa Francis and Amanda Attarian

February 2014

average temperature: low 28°, high 45°
average precipitation: 2.5 in.

What's in bloom?


Palestine sweet lime


Yellow twig dogwood


Freycinetia


Chinese witch hazel


Stokes' aster

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
						1 ■ Orchid Show opens, *through March 23*, $ RVC
2 **GROUNDHOG DAY**	3	4	5	6	7	8 ■ Hot! Hot! Hot!, 10 a.m. to 3 p.m. BH
9 ■ Hot! Hot! Hot!, 10 a.m. to 3 p.m. BH ■ Celebrate the Gospel Concert, 3 p.m., ST ■ Corporate Partners Day, 9 a.m. to 5 p.m.	10	11 Members Day: Greenhouse Tour, 10 a.m. ☎	12	13 ■ Valentine's Night Hike, 7 to 10 p.m. $ ☎ SNR	14 **VALENTINE'S DAY**	15 ■ Great Green Adventures: Trees with Winter Coats, 10:30 a.m. and 1:30 p.m. $ CHD ■ Valentine's Night Hike, 7 to 10 p.m. $ ☎ SNR
16	17 **PRESIDENTS' DAY**	18	19	20	21 ■ Around the World Wine Dinner, 6:30 p.m. $ ☎	22
23	24	25	26	27	28	

photos by Lisa Francis, Christina Kelley, and Erin Whitson

GET READY FOR THE HOLIDAYS

From unique gift ideas to our award-winning calendar



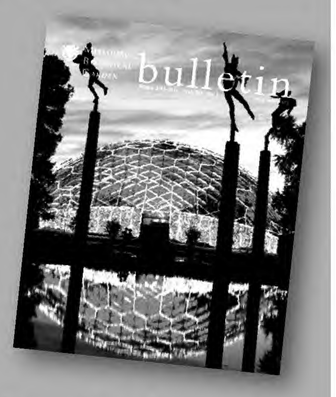
GARDEN GATE SHOP.ORG

All proceeds benefit the Missouri Botanical Garden

photo by Jill Setlich

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photo by Sonia Lalla

Orchid Show

February 1 through March 23

Celebrate the Garden's longtime research and conservation work in South America with some of the most colorful orchids in our collection! The annual Orchid Show offers visitors a once-a-year opportunity to see hundreds of orchids from the Garden's expansive permanent living collection amid a tropical oasis inside the Orthwein Floral Display Hall.
Garden admission plus $5; free for members.

For more information, visit www.mobot.org.

Missouri Botanical Garden

bulletin

Spring 2014 Vol. 102, No. 2 www.mobot.org



photo by Koraley Northen

President's Comment

As we bid farewell to the cold, snowy winter, the Missouri Botanical Garden celebrates spring with more than exciting flowering bulbs and green trees. This year, St. Louis commemorates its 250th anniversary, and the Garden joins in the festivities not only by hosting two of the 250 fiberglass birthday cakes placed in iconic spots throughout the area (Shaw Nature Reserve and the Garden) but also by inviting everyone to think about the next 250 years with our **Planting the Future! Create. Connect. Grow.** theme.

Thinking about our tomorrow is at the core of the Garden's mission. Our commitment to discovering and sharing knowledge about plants to enrich life goes from our conservation and sustainability efforts (see pages 5 and 7) to our passion for nature-inspired learning (see page 12) through a wide range of education programs and special exhibits like Nature Connects: Art with LEGO® Bricks.

Looking towards the future also means celebrating and preserving our rich history, which is why not only are we in the process of renovating one of our most beloved gardens (see page 9) but also celebrating 75 wonderful years of our membership program (see page 4). Thank you for being a part of our past, present, and future!

In this first Education Issue of the *Bulletin*, you'll find stories and opportunities that will hopefully inspire you to get out and learn more about the world around you. Spring is always an exciting time at the Garden, Butterfly House, and Shaw Nature Reserve. We invite you to explore your back yard, your neighborhood park, and your region's green spaces to discover the wonderful, biodiverse world we live in. Now is the time to grow!



Dr. Peter Wyse Jackson,
President

As a Garden member, did you know:

- You receive reduced pricing for special events?
- You can enjoy evening walking hours on Tuesdays in the summer?
- You receive free admission for two adults and all children ages 12 and under to the Shaw Nature Reserve and Sophia M. Sachs Butterfly House?
- You receive free admission to the Children's Garden all day Tuesdays? (Open April–October)
- Special Members Days include exclusive events and activities, free tram rides, and discounts in the gift shops and café?
- You enjoy free or reduced-price admission to nearly 270 botanical gardens and arboreta in the U.S. and Canada?

These are only a few of your benefits. Visit **www.mobot.org/membership**, email **membership@mobot.org**, or call (314) 577-5118 to learn more.

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Garden Hours

The Garden is open 9 a.m. to 5 p.m. seven days a week except during holiday hours (November–January). Closed on Christmas Day. The Garden stays open on Wednesday evenings from 5 to 8 p.m. from Memorial Day through Labor Day. Visit **www.mobot.org** for more information.

General public outdoor walking hours begin at 7 a.m. Wednesdays and Saturdays.

General Admission

$8 ($4 for residents of St. Louis City and County); children 12 and under are free. Garden members receive free admission (based on level).

Children's Garden: $5 for children; adults admitted free. ($3 for Garden member children.) Member children admitted free on Tuesdays. Open April through October.

Contact

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4344 Shaw Blvd., St. Louis, MO 63110
(314) 577-5100 • www.mobot.org

On the Cover

Outdoor learning can lead to new and exciting ways to connect with the world around us. Photo by Paul Straatmann.

Credits

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photo by Molly Krohe

To discover and share knowledge about plants and their environment in order to preserve and enrich life.

– mission of the Missouri Botanical Garden

News

Board of Trustees Update



Lelia J. Farr was elected chair of the Garden's Board of Trustees during the December 2013 board meeting. She previously held the position of co-vice chair with Cheryl Morley and is the first woman to chair the Garden's Board.

Farr graduated from Wake Forest University in North Carolina with a degree in economics and received her MBA from Vanderbilt University. She serves on the boards of several nonprofit organizations in St. Louis and is also a Trustee for Wake Forest University. She and her husband David have two children and are generous supporters of many organizations across our community.



At the same meeting, the board also elected Dr. Michael K. Stern as a new member. Dr. Stern has been the Vice President of U.S. Seeds and Traits at Monsanto since 2009. Previously, he was Vice President of U.S. Row Crop Business and CEO of Renessen LLC, a biotechnology joint venture with Cargill.

Dr. Stern earned a Postdoctoral Associate from the Massachusetts Institute of Technology (MIT), a PhD in chemistry from Princeton University, and an MS and BS in chemistry from the University of Michigan and Denison University, respectively. In addition to being the author and inventor of more than 50 scientific publications and U.S. patents related to agricultural technology, he has won the Presidential Green Chemistry Challenge Award and the Monsanto Distinguished Science Fellow award.

Garden Welcomes New Science and Conservation Senior Vice President



After an extensive search, Dr. James Miller was named Senior Vice President of Science and Conservation in December. He previously worked at the Garden for more than 20 years before departing in 2007 to serve as Dean and Vice President for Science at The New York Botanical Garden. There, he managed programs in North America, Asia, South America, and the Pacific.

Considered a world authority on the systematics of the Boraginales, a large order of plants with nearly 3,000 species, Dr. Miller has conducted extensive field studies, published numerous new species, and worked in the enthno and economic botany fields. He has a doctorate in Biology from St. Louis University with an MS and BS in horticulture from the University of Maryland. "Dr. Miller has world-class leadership and research experience, and we are very pleased he is returning to the Garden," says Garden President Dr. Peter Wyse Jackson.

Membership Program 75th Anniversary

In the spring of 1939, the Garden's Board of Trustees established the "Friends of the Garden" as one of two committees to raise funds to support the Arboretum. This committee would evolve into the Garden's membership program, which today boasts more than 40,000 members across the world.

To celebrate the 75th anniversary of the membership program, members who visit the Garden and its family of attractions on Thursday, May 1, can bring additional guests at an admission price of only 75¢ per person. To learn more, visit **www.mobot.org/memberevents**.

The Members' Board is the leadership group of volunteers in charge of organizing activities that encourage and enhance membership, expand awareness in the community, and increase financial support. "I am so proud to be a part of the Members' Board as we celebrate our 75th anniversary," says Parker B. McMillan, Board President. "Accomplishing our mission takes many dedicated



The Members' Board welcomed Celeste Kennedy and Steffie Littlefield as new members at its January meeting. (photo by Dan Brown)

individuals who, since 1939, have played an instrumental role in making the Garden the world-class institution it is today."

Outstanding Scientist Award for Garden Curator

Garden Curator Dr. George Yatskievych received one of the two Trustees Awards of the 2014 Outstanding Scientist Awards from the Academy of Science–St. Louis. The Academy's Board of Trustees announced the recipients in January and will present the awards on Wednesday, April 9, at a ceremony at the Chase Park Plaza Hotel. The Trustees Award recognizes outstanding contributions to the Academy of Science–St. Louis in its mission of promoting the understanding and appreciation of science, engineering, and technology.

Last year, under Dr. Yatskievych's leadership and in association with the Missouri Department of Conservation, the Garden completed the three-volume *Flora of Missouri*, a comprehensive guide to the state's flora that includes taxonomy, distribution, conservation concerns, and uses. "This is an exciting and richly deserved honor for George," says Garden President Dr. Peter Wyse Jackson.

Garden's "Green Jean" Ponzi Commended

With more than 25 years of experience in environmental education, the Garden's Jean Ponzi is an expert in energy efficiency, recycling, native plant landscaping, water conservation, and many other green-living practices. Last October, Ponzi received the Kay and Leo Drey Environmental Stewardship Award during the Missouri Coalition for the Environment's 44th annual Green Onion Gala. The award honors community members who have had a positive impact on the environment.

In addition to being the Green Resources Manager at the Garden's EarthWays Center, Ponzi has been a frequent contributor in many publications and broadcast media. She also produces and hosts *Earthworms* on FM-88.1 KDHX and *Growing Green St. Louis* on AM-550 KTRS. In January, the Population Institute in Washington D.C. presented *Earthworms* and Ponzi its "Best Radio Show" award at its 34th annual Global Media Awards. The institute recognizes individuals and programs that contribute to the public discussion and understanding of population and development issues through accurate media coverage.

"Jean's expertise in sustainability topics, combined with her inspiring communication skills, have significantly advanced green thinking and practices within our region and beyond," says Deborah Frank, Vice President of Sustainability. "The Garden and the community benefit greatly from her work on our team."



Ponzi (left) receives Kay and Leo Drey Environmental Stewardship Award from Kay Drey (right).
(photo courtesy of Dale Dufer Studios)



The World Flora Online Council met in Edinburgh, Scotland, in November. Since the memorandum of understanding was opened for signing in January 2013, 21 organizations have already joined the World Flora Consortium.
(photo courtesy of Royal Botanic Garden Edinburgh)

World Flora Online Update

The council of the World Flora Online (WFO) met in November at the Royal Botanic Garden in Edinburgh, Scotland. The meeting focused on how these scientific institutions, with a $3-million support gift from Monsanto Company, will combine their efforts to achieve a World Flora by 2020. The council will meet again in June in St. Petersburg, Russia.

Representing the Missouri Botanical Garden were Dr. Peter Wyse Jackson, President; Dr. Robert Magill, former Senior Vice President of Science and Conservation; Chuck Miller, CIO and Vice President of IT; and Steve Kappel of the Garden's Center for Biodiversity Informatics. Dr. James Miller, now at the Garden, represented The New York Botanical Garden.

News cont.



photo by Lindsay Moser

Early Childhood Education Programs Receive Support

Recent support from two St. Louis businesses will enable the Garden's work in early childhood education to grow in scope and impact. The multi-year, early childhood initiative of PNC Foundation, *Grow Up Great*, will be extended through 2016. Focused on Grace Hill Head Start students and teachers in St. Louis, this community collaboration involving the Garden and other cultural institutions aims to expose low-income preschoolers and their families to activities, concepts, people, and places they might not otherwise experience.

New in 2014, the Garden is partnering with The Boeing Company and the St. Louis Public School District (SLPS) to launch *Sprouting Science in St. Louis: Digging Deep With Urban Youth.* The two-year program, made possible by a generous grant from Boeing, is an unprecedented effort in the area that weaves together early childhood education and urban biodiversity. The goal is to cultivate a child's interest in plants and nature in their neighborhoods through activities such as classes held at the Garden, school-based outreach programming, and family engagement events throughout the year.

"Inspiring curiosity and caring for plants and nature among our youngest citizens is really important," says Sheila Voss, Vice President of Education at the Garden. "The four-year-old explorers of today are tomorrow's creative problem-solvers, thinkers, and doers."

In addition to working closely with SLPS teachers and leaders to create meaningful experiences for students, *Sprouting Science in St. Louis* also provides support to strengthen teachers' engagement. Throughout the year, the Garden will host SLPS teachers and school leaders in professional development workshops to learn more about how to incorporate nature into their curriculum. "Bringing our teachers to the Garden really helps them see the Garden for what it is—an extension of their classroom, a world-class learning environment right in our own backyard," says Paula Knight, Associate Superintendent of SLPS.

Garden Recognized for Sustainability Efforts

The Garden received one of the 2013 Mayor's Sustainability Awards in November during the Mayor's Sustainability Summit III.

The event was part of the implementation phase of the Sustainability Plan of the City of St. Louis, which the Garden helped develop through its expertise in environmental conservation. "I'm proud and grateful to have so many remarkable residents, businesses, and organizations working hard to improve our economy and better the health and well-being of the people who live, work, and play in the City," Mayor Slay said.

He praised the Garden's work in the community, including education, neighborhood regeneration, sustainability, and urban biodiversity through the *BiodiverseCity St. Louis* initiative.

Doug Tallamy Headlines Native Landscaping Event

The Garden will host the "Partners for Native Landscaping" workshop on Saturday, March 22, in partnership with the Missouri Department of Conservation, Metropolitan Sewer District, Wild Ones, St. Louis Audubon Society, and Grow Native. The event will feature presentations by Doug Tallamy, nationally acclaimed author of *Bringing Nature Home.* Signed copies of his book will be available for purchase at the Garden Gate Shop.

The event offers homeowners information and resources on how to landscape with native plants to create healthier communities. Learn about managing invasive plants, rainscaping, gardening under shaded areas, and more. Register at **www.stlouisaudubon.org/PNL**. Registration is limited. For more information, call (636) 451-3512, ext. 6078.

Garden Receives Grant for Crowdsourced Video Game

The Garden received a $449,641 grant for two years from the Institute of Museum and Library Services to test how crowdsourcing and gaming can support the digitalization of texts from the Biodiversity Heritage Library (BHL). The project, "Purposeful Gaming and BHL," aims to improve access to the single largest open-licensed source of biodiversity literature.

With more than 40 million pages of scanned text available online, the BHL's challenge is to digitize historical literature, some of which dates back to the 1400s, with handwritten notes and a wide variety of fonts and layouts. There is no Optical Character Recognition (OCR) software to accurately recognize these variances, making it difficult to search for these titles.

The project will consist of an online game where users will help identify words that are difficult for the OCR software to recognize. "Digital gaming as entertainment has been around for several decades but only recently has it been used for more practical purposes," says Trish Rose-Sandler, data project coordinator in the Center for Biodiversity Informatics at the Garden and data analyst for BHL. "Combined with crowdsourcing, it can be a very efficient way to harness large numbers of users to complete a task."

The Garden will collaborate with Harvard University, Cornell University, and The New York Botanical Garden on the project.

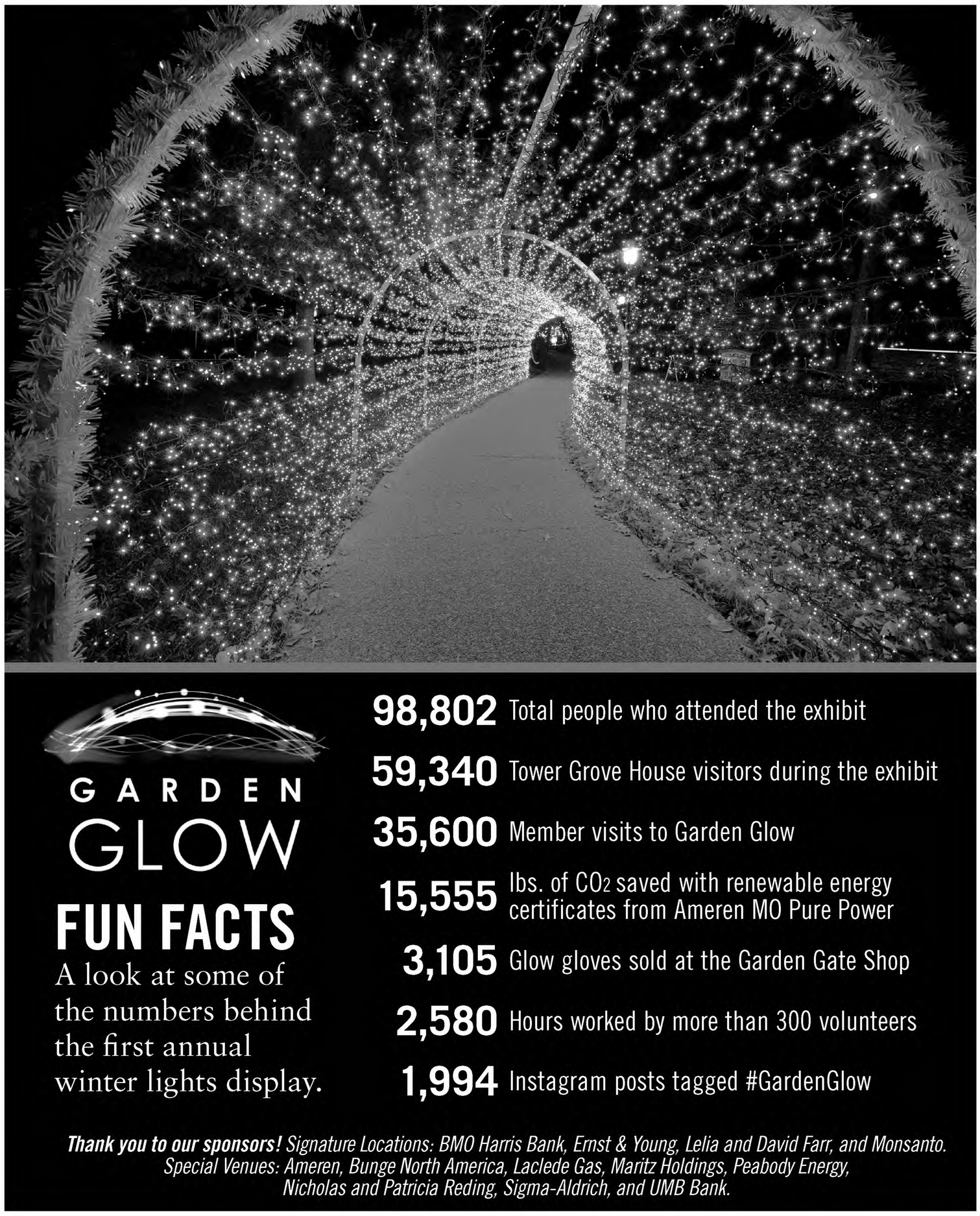


photo by Dilip Vishwanat

Garden Publishes Key Caucasus Guides

After almost 10 years of research, the Garden has published two key resources for the Caucasus region, one of the world's most biodiverse areas. The *Red List of the Endemic Plants of the Caucasus* focuses on the endemic plant species of the region, providing a country-by-country overview, with distributional information and detailed maps for some of the most critically endangered species. "This book is the result of the first collaboration between botanists from all of the Caucasian countries working together on a single project," says Dr. Tatyana Shulkina, Garden researcher and one of the project's editors. "The information it contains will form the basis for conservation decisions and direction for future research for many conservation organizations around the world."

The *Red List* is the first botanical publication about the flora of the Caucasus region written entirely in English, which will help botanists and conservationists from around the world learn more about this diverse area. Garden President Emeritus Dr. Peter H. Raven wrote the foreword.

News cont.

To complement the book, the Garden also published *Caucasus Plant Initiative: A Regional Plant Conservation Strategy* last summer in collaboration with Botanic Gardens Conservation International (BGCI). The document outlines the conservation strategies related to the targets outlined in the Global Strategy for Plant Conservation (GSPC) set by the United Nations in 2002. Together these two publications represent one of the most comprehensive botanical resources for basic information on this biodiverse hotspot.

The Caucasus region includes Armenia, Azerbaijan, Georgia, and parts of Iran, Russia, and Turkey. Its flora has about 6,300 species of vascular plants, of which nearly 2,800 are endemic.

How To: Build a Worm Bin

PLANTING the future

By Kat Golden, Garden Instructor



Watch the instructional video at **www.mobot.org/plantingthefuture** and join instructor Kat Golden for **Composting Completely** on Thursday, May 8, 7 to 8:30 p.m. to learn all about compost and to build your own kitchen compost waste collector. For more information and to register, visit **www.mobot.org/classes**.
(photo by Dan Brown)

Materials:

1 dark 8–10 gallon plastic bin with lid

1 drill

Window screen

Newspaper and cardboard

1/4–1 lb. of red wrigglers

Top-soil (without fertilizer or other chemical additives)

1 air-tight container

Directions:

Drill 5–10 holes at the bottom of the bin and a few small holes on the sides.

Cover the bottom of the bin with window screen.

Place 3–4 inches of moist, shredded newspaper and soggy cardboard at the bottom of the bin.

Add a handful of dirt and the worms.

Cover with another layer of the moist newspaper bedding and place your bin in a well-ventilated area with a tray for drainage.

Feed worms once or twice a week with small chunks of food scraps.

Harvest the castings about two months later by stopping to add food scraps. Add fresh bedding and a handful of soil after harvesting.

Gardening Q&A



How do I protect my plant from frost?

Unexpected spring and fall frosts (down to 28 ºF) strike panic in the hearts of many gardeners. There's no way we can accurately predict or control the temperature, but there are several measures to protect plants from these light frosts.

- Plan for frosts. Contact your local weather bureau to find out the average last spring frost for your area. In St. Louis, it's typically April 15 (actual dates fluctuate).
- Cover the plants with cloth, newspaper, straw, or evergreen boughs to help trap soil heat around them and prevent cold air from striking them. If you use plastic, make sure it's not in direct contact with the plants. Boxes and inverted pails can also be used. Remove the coverings, especially plastic, when the temperature rises above freezing.
- Experiment with this commercial practice: sprinkle tender crops with 1/8" of water per hour until the ice melts off. As the water freezes, it gives off heat and keeps the plant from freezing. Do not use this method on trees, shrubs, or other plants that could be broken or damaged by the weight of the ice on the plants.

Have a gardening question? Visit **www.mobot.org/gardeninghelp** to get all the answers you need!

Garden Treasure

The Japanese Garden's Past, Present, and Future

photos by Jill Setlich



Last fall, after 37 years of delighting visitors, the Japanese Garden was temporarily closed to the public as important renovations were made. The first phase is scheduled to be completed this spring.

Since it opened in 1977, *Seiwa-en*, "garden of pure, clear harmony and peace," has been regarded as one of the finest Japanese gardens in North America. With its iconic bridges, lanterns, dry gardens, and central lake, this 14-acre inspiring landscape invites visitors to experience each season in their own way. Whether it's the cherry blossoms in the spring, the flowering sacred lotuses in the summer, the breathtaking colors in the fall, or the serenity of snow in the winter, the Japanese Garden has marveled guests for more than three decades.

As part of the Missouri Botanical Garden's commitment to celebrate and protect our history, the Japanese Garden underwent its first of several repair and maintenance phases last winter. As it prepares to welcome visitors again this spring, we take you through a visual journey of some of the key points of this process, what you can expect on your next visit, and what still needs to be done. Learn more about how you can help secure its future by visiting **www.mobot.org/japanesegarden.** Be a part of this botanical, cultural, and historical treasure's history!

Thank you for your support! Robert Elkington Revocable Living Trust, Mr. and Mrs. Charles P. Gallagher, Mr. and Mrs. David Kipnis, Mr. Sidney Goldstein and Ms. Laura Kipnis, Mr. and Mrs. Robert J. Kipnis, Drs. Steven Rothman and Lynne B. Kipnis, Mrs. Laura R. Orthwein*

**deceased*

Ben Chu,
Horticulture Supervisor
Japanese Garden

It is important to do the repair now because a lot of the infrastructure has lasted a very long time. Thirty-seven years is a good amount of time for concrete waterfall structures and wooden structures to last. If we wait any longer, it will continue to jeopardize some of the plant material we've put a lot of work into and begin to detract from the appearance of the Japanese Garden.



Bridges

A lot of the bridges had the support beams underwater, and we didn't realize the extent of the deterioration until the water was lowered.







(clockwise) The Drum Bridge (*Taikobashi*) will maintain a see-through quality and not block the view from one end of the garden to the other. The Flat Bridge (*Togetsukyo*) will have more railing planks for support and safety. The Earthen Bridge (*Dobashi*), which leads to Teahouse Island, and the Zigzag Bridge (*Yatsuhashi*) were completely stripped down, rebuilt, and restored to their original design.

Our garden is considered one of the finest in North America, so I think it is important that we try to maintain it given that reputation.





Waterfalls

Water had an opportunity to get under the existing concrete foundation over time. We had some root disruption on the east waterfall, which allowed the water to escape the channel and actually get under the concrete and erode it.



Boat Landing

A shim underneath one stone either shifted or deteriorated, and once that happened, the stone began to slip. It wouldn't have fallen into the lake, but it moved enough that it created a gap of almost an inch between the granite slabs.

You can help! Become a part of the Japanese Garden restoration with a gift to the Garden. Learn more at **www.mobot.org/japanesegarden**.

(top) Water erosion and root disruption have caused damage to the waterfalls. A rubbery compound was injected to fill gaps between the concrete and the stones, preventing future problems and maintaining the plant material. (bottom) New concrete was packed under the stone slab to prevent it from shifting. The next renovation phases will involve repairing the deteriorating metal on the shoreline and installing an irrigation system for more efficient maintenance.

CONNECT WITH NATURE

How to Fuel Your Creativity

PLANTING *the future*



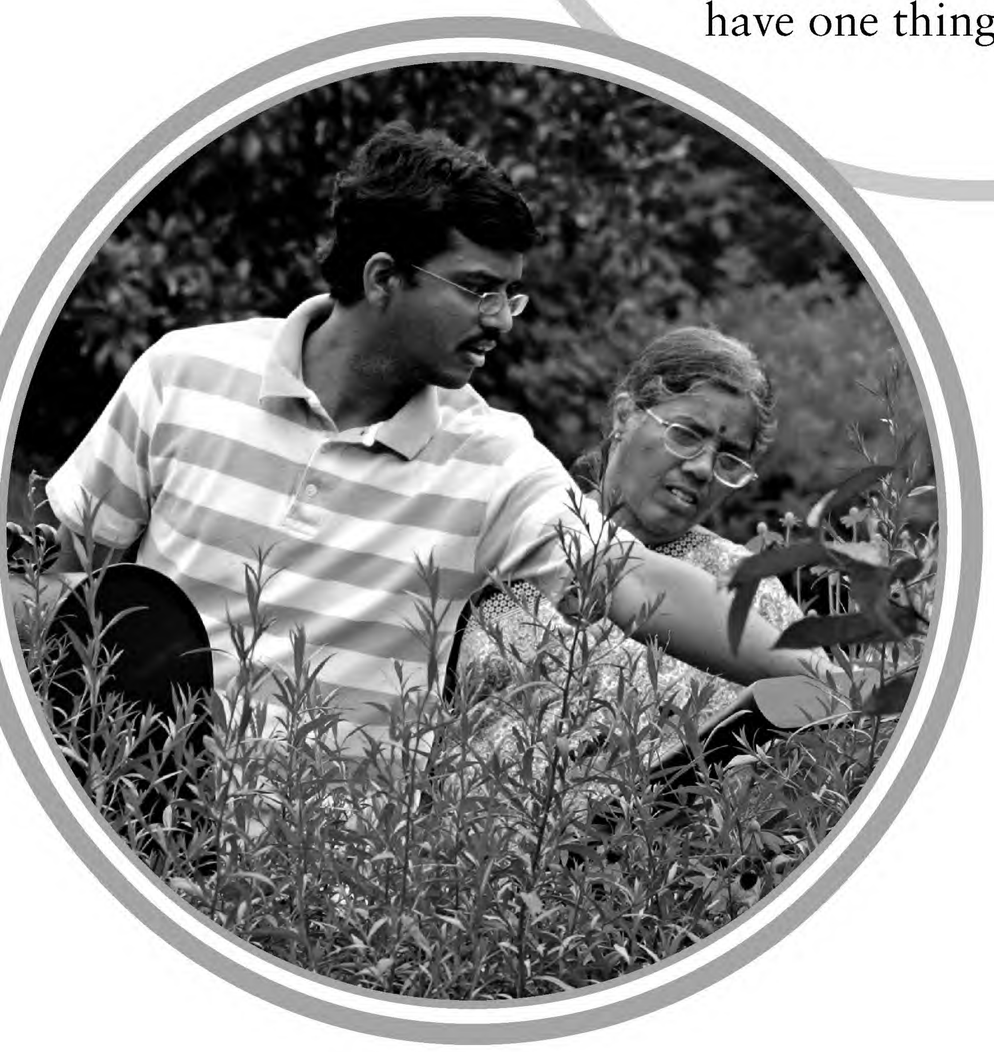
Create and Grow

People have a natural curiosity to explore the world around them. For thousands of years, it's what has driven pioneers to all corners of the world and beyond. It's what turned countless experiments into revolutionary discoveries in science, medicine, technology, etc. It's what opens doors to new values and ideas that connect us all.



It's hard to imagine where we would be today without this natural curiosity. As it celebrates its 250th anniversary, where would St. Louis be without people's sense of exploration? Where would the Missouri Botanical Garden be if Henry Shaw hadn't explored his natural connections? More importantly, what are we doing today to spark that curiosity in both children and adults that could lead to the next big thing? The answers to these questions have one thing in common:

inspiration from nature





Cultivate and Connect

As both a visitor and a teacher, J'Ann Allen has seen first-hand the wonders of nature-fueled creativity that come with every visit to the Garden. She and her husband often bring their children and grandchildren, and they know the kids are learning how the world is a diverse, interconnected network of life. "The Garden shows both children and adults that, yes, plants are beautiful," says Allen. "But besides just walking through a pretty place, children see the connection of life in a hands-on, relaxed way. They're seeing the connection between themselves and the world around them."



Visitors of all ages can experience nature in different ways with every visit. "It's an incredible experience on a different level each time," Allen says. As you absorb the natural beauty around you, it won't take long before you begin asking questions such as "Why are blueberries blue?" or "What does a butterfly eat?" At the Garden, everything from our growing Living Collections and ecological restoration efforts to our classes and special exhibits has one purpose: to fuel that curiosity to discover the natural connections around us.



Imagine and Play

It only takes one question to light that spark, so don't be afraid to ask the whys and hows. So much of our daily lives is ruled by structure and function that we often forget to just go outside and play—play with our senses, with our imagination, and with our surroundings. As we grow up, some of that curiosity may go dormant, but we invite you to explore the rich, biodiverse environment you live in.

Have a picnic surrounded by native plants at the Reserve, capture the beauty of a butterfly's wings with a photography class at the Butterfly House, or simply stroll through the Garden and stop by the Brookings Interpretative Center to discover nature in your own neighborhood. Whatever you do, go outside and don't lose your sense of wonder! You never know what you may discover about yourself and the world around you.

photos by Molly Krohe, David Meritt, Leslie Patrice, Kevin Kersting, Lindsay Moser, and Jami Ford



NATURE CONNECTS

Art With LEGO® Bricks

MAY 24–SEPT. 7

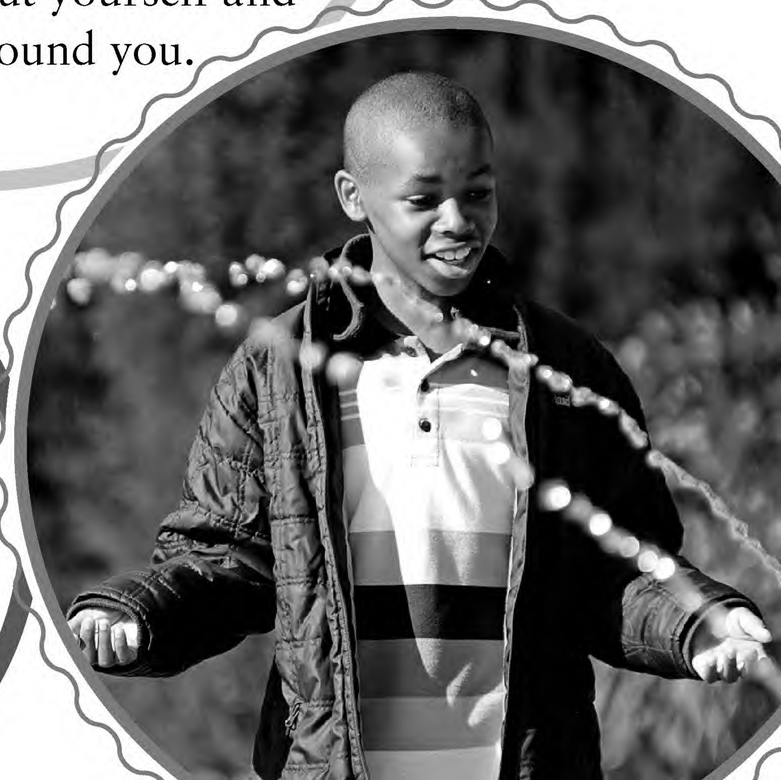
www.mobot.org/natureconnects

Explore larger-than-life plant and animal sculptures as they take up residence at the Garden this summer.

DON'T MISS

MEMBERS GET MORE!

Members get to preview the exhibit on Friday, May 23. Learn more at **www.mobot.org/memberevents.**



Butterfly House







The Missouri Botanical Garden, Butterfly House, and Shaw Nature Reserve offer a variety of programs for you and your children as they prepare to enter preschool and kindergarten.

Something For The Little Ones

Introducing Young Children to Nature-Inspired Learning

Every parent and caregiver has probably heard the dreaded words "I'm bored" from their young child at some point. Finding activities to entertain and educate young children on a daily basis can be a difficult task. It's both challenging and critical to their future. Research has shown that active outdoor play and close contact with nature has many developmental benefits for children, including strength, balance, and coordination; it also helps tackle health issues like obesity, stress, and ADHD.

In recent years, the Garden has deepened its work in the early childhood education field (see page 6). Focused on connecting young children with nature, this work is also having positive impacts on students' school readiness, literacy skills, and capacity to learn.

In 2014 the Garden and its family of attractions invite your little ones to explore new and exciting ways to continue doing what they do best—play, experiment, dig, smell, touch, wonder—with the new Little Years series. Designed for busy, modern parents and caregivers with children ages 2–5, this early childhood education series features activities that focus on your child, you, and nature as they prepare for preschool and kindergarten. To complement the popular Little Sprouts classes at the Garden, the Butterfly House and Shaw Nature Reserve offer Little Bugs and Little Nature Explorers, respectively, in addition to other programs with hands-on activities, outdoor learning opportunities, and take-home ideas to extend learning.

Butterfly House: Little Bugs

The expanded Little Bugs program debuts this spring at the Butterfly House and is designed for children ages 2–4. Each course includes six sessions and offers toddlers and their caregivers the chance to learn more about bugs and butterflies. Sessions include a craft, story time, snack, and a walk through the conservatory. When weather permits, guided nature walks outside will also be included. Children will learn more about animals, practice basic math and literacy skills, and connect with nature and their caregivers.

The Butterfly House is also offering the BUGjar Club to visitors ages 3–8. This drop-in program will highlight a different bug each month. Held on

photos by Jill Setlich, Kaitlyn Mauro, Kevin Kersting, and Sonya Burck

Shaw Nature Reserve







These indoor and outdoor programs allow children to connect with nature in many different ways and develop the skills they'll need as they grow up.

Tuesdays at 9:30 a.m., the one-hour sessions include a bug-themed book, a craft, and instruction from Butterfly House staff and docents.

Young visitors can also give their feedback on new exhibits this year to help determine what should remain part of the permanent collection. Visit the Butterfly House soon to see the newest offerings such as "Exploration Station" and "Caterpillar Corner," featuring insect specimens, bird-watching stations, a mini marketplace, and more. Learn more at **www.butterflyhouse.org**.

Shaw Nature Reserve: Little Nature Explorers

As children's curiosity of the outside world continues to expand, the Little Nature Explorers program at Shaw Nature Reserve is an excellent way to introduce them to nature in one of the area's most beautiful settings. The program features hands-on activities, both indoor and outdoor, designed to strengthen a child's connection to the natural world. Each month visitors ages 3–5 will learn about different plants and animals that call the Reserve their home.

Children and their families can also enjoy the Reserve's Nature Explore Classroom (NEC) and the upcoming Sense of Wonder Woodland. This new addition to the popular NEC, a gift from the Ott family in memory of Mary Ott, will feature fairy houses, climbing structures, quiet spaces for reading and drawing, a wetland, and more. The trail leads visitors into the newly restored Pinetum.

If your family prefers self-guided activities, the Reserve also hosts StoryWalk®, a project created by Anne Ferguson of Montpelier, Vermont, and developed in collaboration with the Vermont Bicycle & Pedestrian Coalition and the Kellogg Hubbard Library. Featuring a new children's book each month displayed along an outdoor trail, this program combines the benefits of outdoor physical activity and literacy while enjoying family time. Visit **www.shawnature.org** to learn more.

Get involved! Your contribution will help the Garden's education programs continue to make a difference. Learn more at **www.mobot.org/donate**.

Little Years

For details and to register: **www.mobot.org/classes**.

Little Sprouts

7 Mondays, Tuesdays, or Wednesdays in April and May; 10 to 11:30 a.m.; Missouri Botanical Garden

For ages 2 to 3. Learn about plants and nature with your toddler.

Little Bugs

6 Mondays or Thursdays in April and May; 10 to 11 a.m.; Butterfly House

For ages 2 to 4. Learn about butterflies and create works of art together.

Little Nature Explorers

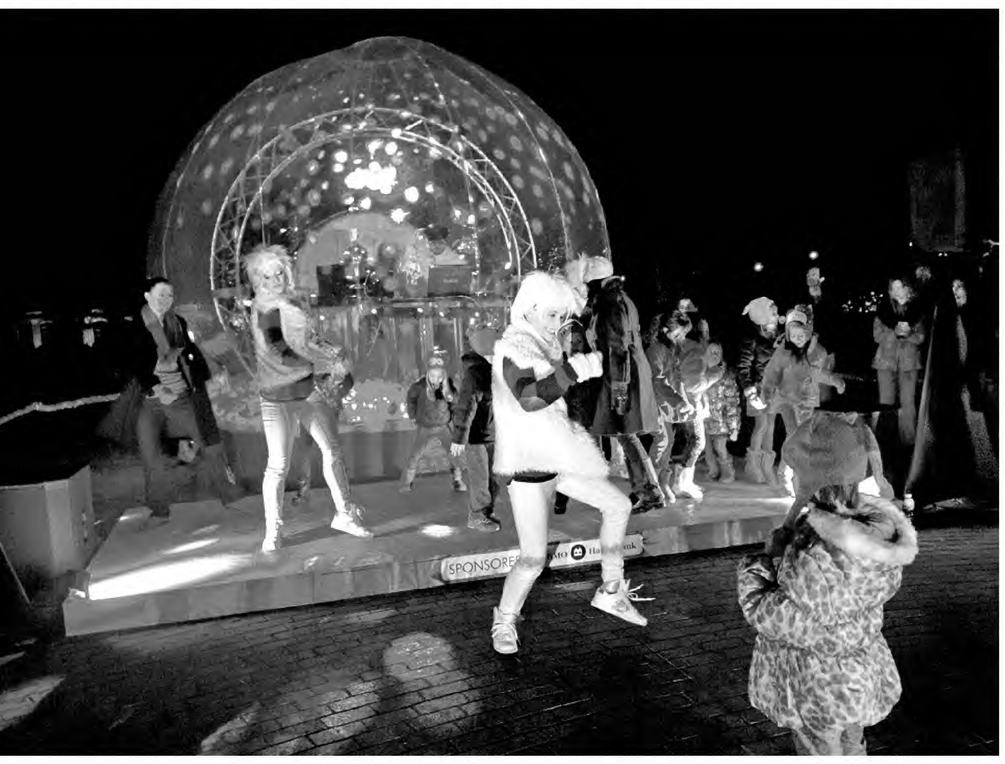
3 Mondays or Tuesdays in April, May, and June; 9:30 to 11:30 a.m.; Shaw Nature Reserve

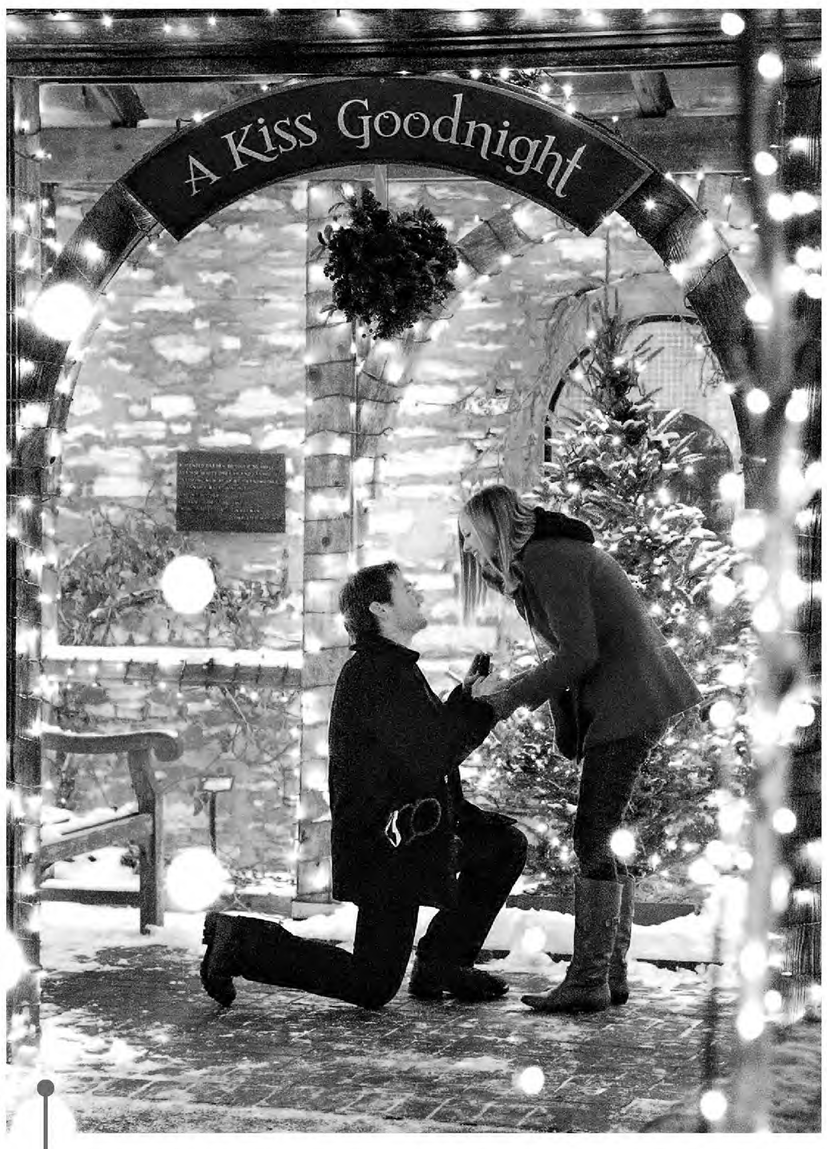
For ages 3 to 5. Strengthen your child's connection to the world around them.

Seen at the Garden













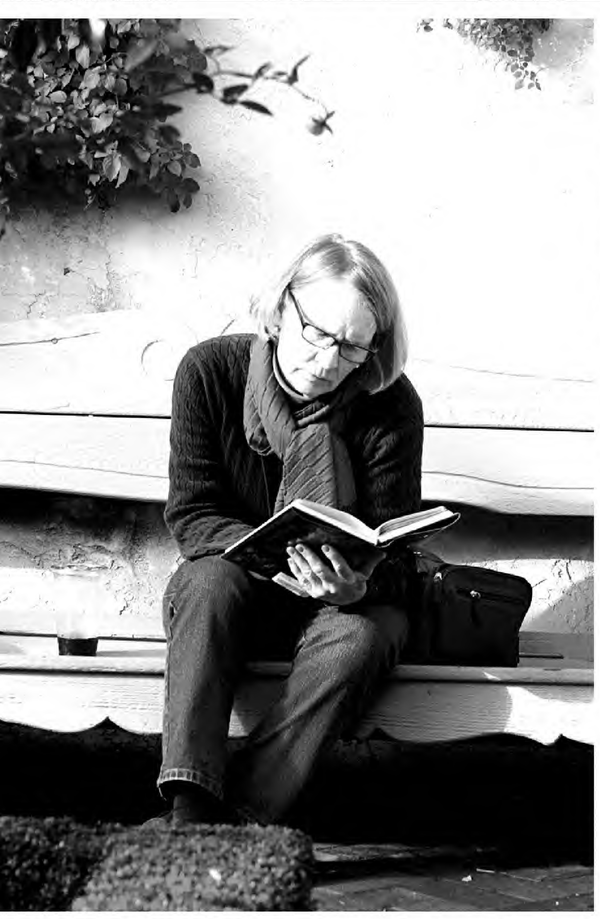
Special Kiss Goodnight

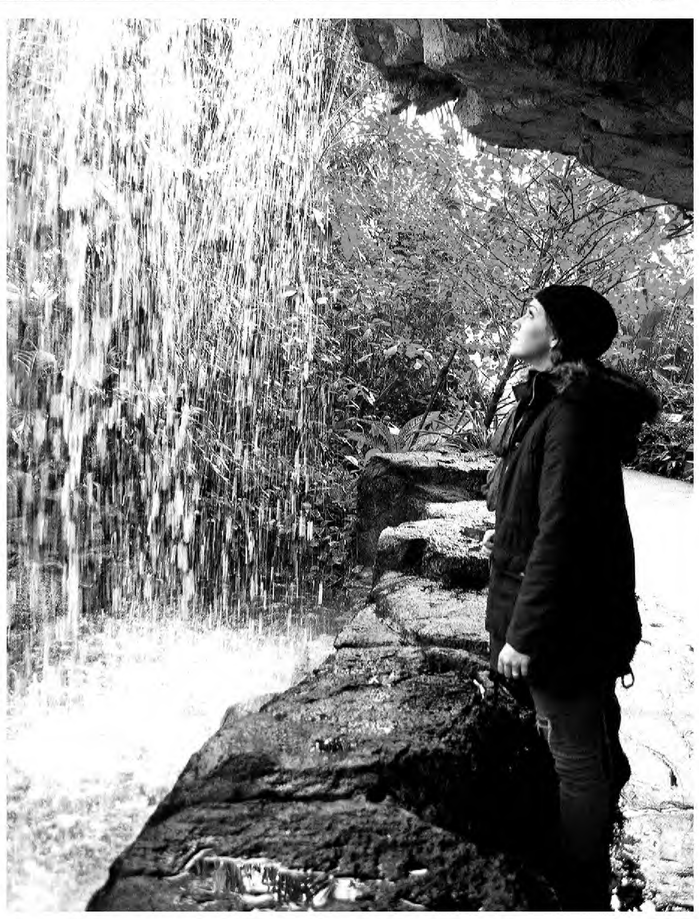
Johnny knows that my absolute favorite place here in St. Louis is the [Missouri] Botanical Garden! As we neared the end of our walk through the Garden, Johnny asked me if I wanted to take a picture inside the "A Kiss Goodnight" gazebo. He got down on one knee and asked me to spend the rest of my life with him. Of course, I said yes! I honestly could not imagine a more special place for him to do so!

~ Katherine McKean



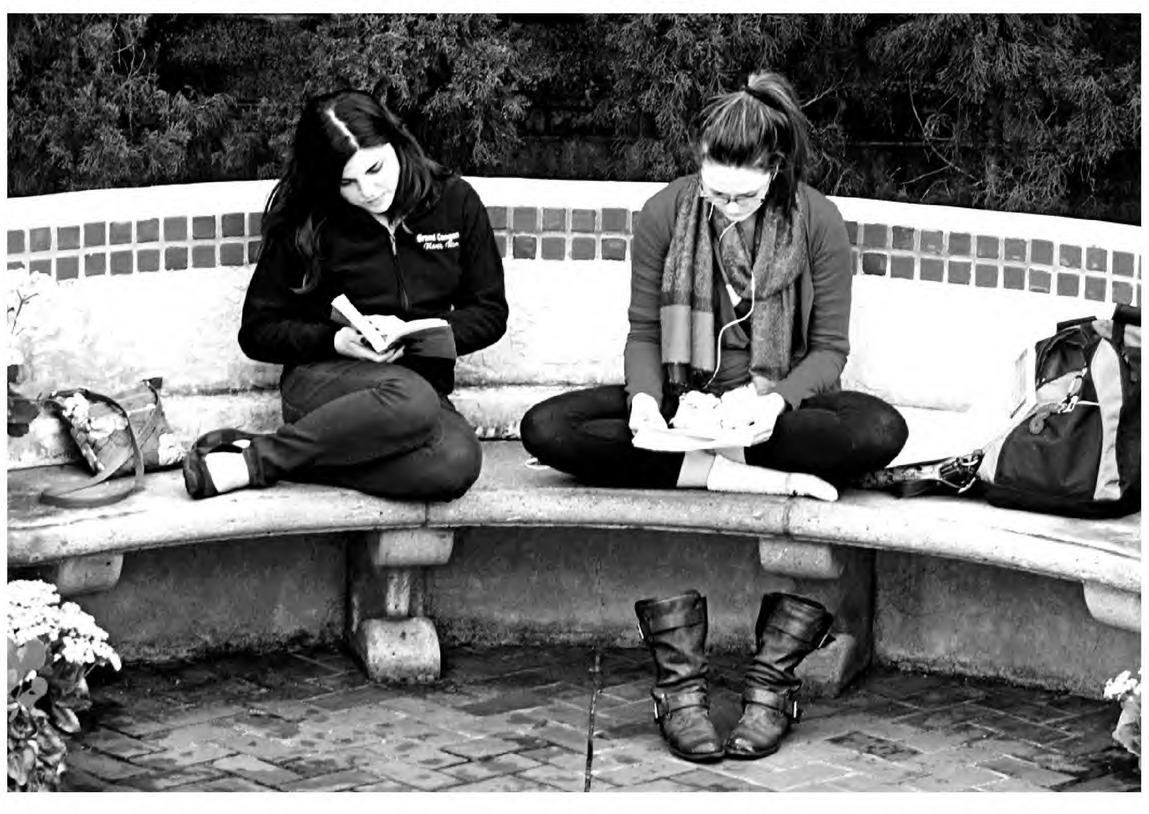














photos by JJ Mueller, Brian Mueller, Jonathan Knobelock, Amanda Beal, Kerri Carter, and Dan Brown. Proposal photo courtesy of Andy Turner, A Lovestory Productions.

Tributes

October–December 2013.
A tribute gift is a wonderful way to honor family and friends. Tributes of $25 or more are listed in the *Bulletin*. For more information about giving opportunities at the Garden, please call (314) 577-5118. You can also make a tribute gift online at **www.mobot.org/tributes**.

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David Yagow
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Mrs. Helen B. Gross



Sophia M. Sachs Butterfly House Tributes & Pavers

October–December 2013. Call (314) 577-05118 or visit **www.butterflyhouse.org/donate** to learn more.

Tributes

In Honor of

Ms. Karen Bartoni
Dr. Lynn Staley and Dr. Kathleen Nigro

Mrs. Carol Kusterer
Mr. Donald P. Kusterer

Mrs. Karen Mueller
Mr. Allen W. Mueller

In Memory of

Mrs. Elizabeth Mehlich
T.O.P.S. Group Ellisville 179

Pavers

Don Brasher
Ms. Lisa Brasher

Kayla Hope Fletcher
Mr. and Mrs. Greg Fletcher

Joyce and Joseph Gamewell
Mrs. Anita Y. Baldwin

Judie Hansen
Sophia M. Sachs Butterfly House Staff and Volunteers

Roberta Maziarz
Red Hat Glitter

Bernadine Richard
Mrs. Sally Wester

Cecil Rogers
Mr. and Mrs. James Fogt

Andrew J. Signorelli
Dr. Jamie Dodd

Beckham James Watts
Mr. and Mrs. Justin Pratt

Members' Entry Court

October–December 2013. For more information, call (314) 577-5118 or visit **www.mobot.org/donate**.

Signature Bronze Bricks

Rev. Deborah Ann Bourbon
AASTL
Mr. and Mrs. Steve Banister
Mr. and Mrs. Richard Bivens
Mr. and Mrs. George Bulkley
Mr. and Mrs. Richard F. X. Burke, Jr.
Mr. Charles Chatt
Ms. Victoria Churchill
Mr. and Mrs. Mark Doig
Mr. and Mrs. Jim Duvendack
Rev. William Duvendack
Mr. Robert Elliott and Ms. Claudia Elliott
Ms. Sara Fleming
Don and Steve Fredericks
Mr. Joseph Giaccotto
Lissa Henderson and Angie Jo Henderson
Mr. Randell G. Holmes
Ms. Pamela Jablonski
Mrs. Janina Johnston
Ms. Carla D. Jones-Alt
Ms. Stacy Key
Ms. Mary Mallory
Mr. Donald McCann
Ms. Rachael Mueller
Ms. Pat Murphy-Johnson
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Mr. and Mrs. James Rice
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Ms. Deborah Schuehler
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Ms. Robin Thiele
Ms. Kathy Toelke
Mr. and Mrs. Gary Toohey
Mr. and Mrs. Kenneth E. Valdejo
Ms. Vanessa S. Webb
Ms. Dana West
Dr. Richard Yakimo
Mr. and Mrs. Frank Zerjav
Zerjav & Associates LC
Mrs. Amy Zuzack

Don Brasher
Ms. Rose Brasher

Charles H. and Betty R. Brock
Ms. Susanna Brock

Radeal Alexander Molina
Ms. Rose Brasher

Sophia Estrella Molina
Ms. Rose Brasher

Engraved Clay Bricks

Susan Andreas
Mr. Ryan Massey

Marie Bragdon
British Connection

Don Brasher
Ms. Lisa Brasher

Susan P. Burke
Mr. and Mrs. Thomas Burke

Leo Ebel
Mrs. Debra L. Ebel

Gloria and Lou Ferrario
Mr. and Mrs. David E. Thomas, Jr.

Mark Guignon
Friends and colleagues of Clayton

Anna and Lee Klimt
Mr. and Mrs. Terry R. Wolf

Dorothy I Prusik
Mr. and Mrs. David E. Thomas, Jr.

Ernie Sciaroni
Webster Groves Castor Bean Society

Helen Morrow Steerman
Ms. Kathy E. Shaffstall

Mary H Stevens
Ms. Donna Cramer

David and Jo Ann Thomas
Mr. and Mrs. David E. Thomas, Jr.

Ms. Patricia Welch
Dr. and Mrs. Robert McFarland

Events

Trivia Night—Garden Style

Saturday, March 1; doors open at 6 p.m.; questions start at 7 p.m.; Ridgway Visitor Center

The event is sold out. Proceeds will benefit the Doris I. Schnuck Children's Garden. Thank you to everyone who purchased a table!

Presented by Macy's.

St. Louis Garden Blitz: Ask the Expert

Saturday, March 1; 9 a.m. to 3 p.m.

Start your spring off smart with a blitz of classes on gardening, food and cooking, art and photography, and health and wellness! Create your own custom-fit educational program taught by expert instructors from an à la carte menu, get answers to your questions at our "Ask the Expert" tables, and enjoy local food trucks on-site. Price per class. Registration required: **www.mobot.org/classes** or (314) 577-9506.

Nature in Your Neighborhood

March 29 through January 4, 2015; 9 a.m. to 5 p.m.; Brookings Interpretative Center

This fun, hands-on, interactive exhibit will challenge visitors to explore and reconnect with nature in their own backyards, parks, trails, and schoolyards. Learn how plants, people, animals, and nature are all connected! Included with Garden admission.

Doris I. Schnuck Children's Garden Seasonal Reopening.

Saturday, March 29 and Sunday, March 30; 9 a.m. to 3 p.m.

Spring into action with two fun-filled days of discovery, exploration, and adventures into the wondrous world of plants. Make plans to create, build, plant, and connect with nature at the Garden. Regular Children's Garden admission rates apply. To learn more, visit **www.mobot.org/finn**.

Presented by Macy's Foundation.



Daffodil Dash

Saturday, April 12; starts at 9 a.m.; Shaw Nature Reserve

Join us for the inaugural 5K trail run at the Shaw Nature Reserve with thousands of blooming daffodils. Proceeds benefit the Reserve. Don't want to get up early? Become a virtual runner! Learn more at **www.shawnature.org**.

Herb Days

Wednesday to Saturday, April 23–26; Wednesday, 4 to 7 p.m.; Thursday, noon to 5 p.m.; Friday and Saturday, 9 a.m. to 5 p.m.; Orthwein Floral Display Hall

Choose from a wide selection of potted fresh herbs, including new and hard-to-find varieties. Members of the St. Louis Herb Society will give demonstrations and guidance on selecting, planting, growing, and using herbs. Included with Garden admission. New in 2014: early public sale from 4 to 7 p.m. on Wednesday.

Members enjoy exclusive shopping hours on Thursday, April 24, from 9 a.m. to noon.

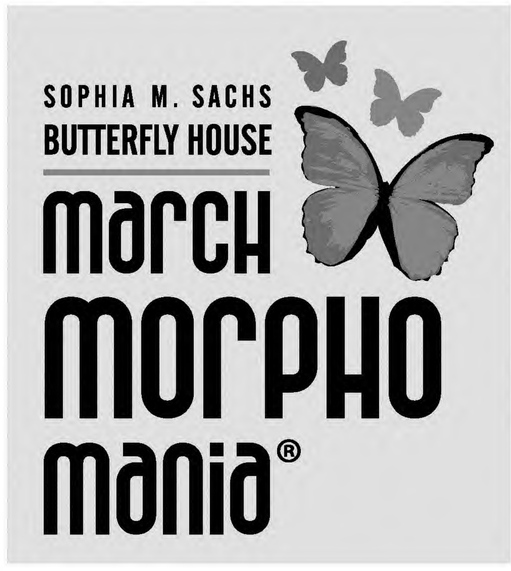
Presented by the Garden Gate Shop and the St. Louis Herb Society.

Grapes and the Garden

Friday, May 2; 5:30 to 8:30 p.m.

Enjoy a special evening sampling fine wines and foods. Tickets include a souvenir wine glass, wine sampling, hors d'oeuvres, and musical entertainment. All attendees must be at least 21 years of age. $35 Garden members; $45 nonmembers; $15 designated driver. Reservations required: **www.mobot.org/grapes.**

Presented by Schnuck Markets, Inc.



March 1 through 31

9 a.m. to 4 p.m. | Open every day this month only

March brings a very special kind of madness to the Butterfly House as we flood the tropical conservatory with thousands of breathtaking Blue Morpho butterflies. Included with Butterfly House admission. Learn more at **www.butterflyhouse.org**.

Members Day: Free special presentations on Tuesday, March 11 at 10 a.m., 1 p.m., and 5 p.m. Reservations required: (636) 530-0076 ext. 10.

Spring Wildflower Market

Saturday, May 10; 9 a.m. to 4 p.m.; Shaw Nature Reserve

The annual sale offers the widest variety of native wildflowers, ferns, trees, and shrubs available in the Midwest. Admission: Free for Garden members and Reserve passholders; $5 nonmembers; $3 seniors and students; free for children 12 and under.

Members enjoy a free preview of the market on Friday, May 9 from 4 to 7:30 p.m.

PLANTING the future

Nature Connects: Art with LEGO® Bricks

May 24–September 7; 9 a.m. to 5 p.m.; Not open during early morning walking hours

Explore the larger-than-life sculptures built with LEGO bricks and created and designed by New York City artist, Sean Kenney. The nature-themed installations will include animals, plants, and people, and will be housed in the Climatron® and Shoenberg Temperate House. $4 members; $3 member children; $6 nonmembers; $5 children (ages 12 and younger). For more information and tickets, visit **www.mobot.org/natureconnects.**

Members get to see it first during the free preview on Friday, May 23 from 5 to 8 p.m. Reservations required: (314) 577-5118 or **www.mobot.org/memberevents.**

Children's Garden, Tower Grove House, Brookings Interpretive Center, tram tours, and Terrace Café will reopen March 29.

photos by Mary Lou Olson and Kimberly Bretz

Tulip Trot

Sunday, April 27; 7 to 9 a.m.

Join the Young Friends of the Garden as they host a 5K fun run through the Garden. Running is normally prohibited, but we make an exception for this special event. All proceeds benefit the Doris I. Schnuck Children's Garden. All runners receive a commemorative running shirt. $30 members; $40 nonmembers. Registration required: **www.mobot.org/tuliptrot.**

Presented by Macy's.



JUST FOR MEMBERS



Members Day: The Art of Container Gardening

Tuesday, March 25; 11 a.m. to noon; Shoenberg Theater

Kim Gamel, Master Gardener and owner of Contained Beauty: Container Gardening by Kim, will focus on professionally designed container gardens. Free for Garden members. Reservations required: (314) 577-5118 or **www.mobot.org/memberevents.**

Members Event: Eggstravaganza

Saturday, April 12; 10 a.m. to 1 p.m.

Egg hunts at the Garden every 30 minutes from 10 a.m. to noon. Children can also win prizes and meet Bunny while seeing the beauty of spring at the Garden. Free for adult Garden members. $5 for children ages 2–12. Children grouped by age for every hunt. Reservations required: (314) 577-5118 or **www.mobot.org/memberevents.**

Members Day: The Joy of Herbs

Thursday, April 24; 11 a.m. to noon; Shoenberg Theater

Anne Cori, owner of Kitchen Conservatory and member of the St. Louis Herb Society, will share her herbal expertise. Enjoy exclusive shopping hours before the lecture. Free for Garden members. Reservations required: (314) 577-5118 or **www.mobot.org/memberevents.**

Members Day: Children's Garden

Saturday, May 3; 9 to 11 a.m.; Children's Garden

Enjoy special activities for the family such as making your own nature journal and potting a plant. Free for Garden members. Reservations required: (314) 577-5118 or **www.mobot.org/memberevents.**

Members Day: March Morpho Mania

Tuesday, March 11; Butterfly House

See page 20 for more details.

Members Day: Nature Connects

Friday, May 23; 5 to 8 p.m.

See event listing on this page for more details.

Shop & Dine

March Morpho Mania–Free Gift!

March 1–31; Tuesday–Sunday; 9 a.m. to 4 p.m.; Butterfly House Gift Shop

Pick up a Blue Morpho quiz when you visit the Butterfly House in March, fill it out, and bring it to the Butterfly House Gift Shop for a free gift! Limit one quiz and one gift per family. See gift shop for more details.

Spring Sidewalk Sale

Monday, March 10–Friday, March 14; 9 a.m. to 5:30 p.m.; Garden Gate Shop, Butterfly House Gift Shop

Shop a wide selection of items just in time for spring.

Sew Good and Trendy Trunk Show

Saturday, March 22–Sunday, March 23; 9 a.m. to 5:30 p.m.; Garden Gate Shop

Shop trendy, eco-friendly items including handmade bags, clutches, and more.

Summer Bulb Sale

March 28–31; 9 a.m. to 5:30 p.m.; Garden Gate Shop

Get ready for summer with a wide selection of bulbs for your garden.

Herb Sale

April 23–26; 9 a.m. to 5:30 p.m.; Garden Gate Shop

Shop your favorite herb varieties and Herbaria's all-natural products.

Easter Brunch

Sunday, April 20; 10:30 a.m., noon, and 1:30 p.m.; Sassafras

Celebrate Easter at the Garden! $29.95 adults, $14.95 children (ages 5–12). Includes same-day admission to the Garden. Reservations required beginning March 1: (314) 577-0200 or (314) 961-7588.

Mother's Day Brunch

Sunday, May 11; 10 a.m., 11:30 a.m., and 1 p.m.; Sassafras

Enjoy Mother's Day Brunch at the Garden! $29.95 adults, $14.95 children (ages 5–12). Includes same-day admission to the Garden. Reservations required beginning March 1: (314) 577-0200 or (314) 961-7588.

Mother's Day–Free Gift!

Sunday, May 11; 9 a.m. to 4 p.m.; Butterfly House Gift Shop

Visit the Butterfly House on Mother's Day, and mom will receive a free gift! Visitors enjoy 10% off at the Butterfly House Gift shop Tuesday, May 6–Sunday, May 11. See gift shop for details.

Café Flora

Brunch at Spink Pavilion

Sunday mornings in March through September

www.mobot.org

Hosta Sale

May 23–25; 9 a.m. to 5:30 p.m.; Garden Gate Shop

Shop a wide variety of hostas in the first annual Hosta Sale.

Members 20% Sale at the Shops

May 14–18; Garden Gate Shop, Butterfly House Gift Shop, and Little Shop Around the Corner

Don't miss this opportunity when all Garden members receive 20% off purchases in the shops during this five-day special sale. All proceeds benefit the Missouri Botanical Garden.



Around the World Wine Dinner

Travel around the world through a four-course dinner hosted by a wine expert. Third Friday of the month. 6:30 p.m. Reservations required: (314) 577-0200. Learn more at **www.mobot.org/events**.

Garden Gate Shop
4344 Shaw Blvd.
St. Louis, MO 63110
Monday–Sunday
9 a.m. to 5:30 p.m.
(314) 577-5137

Butterfly House Gift Shop
15193 Olive Blvd.
Chesterfield, MO 63017
Tuesday–Sunday
9 a.m. to 4 p.m.
(636) 530-0076 ext. 15

Little Shop Around the Corner
4474 Castleman Ave.
St. Louis, MO 63110
Tuesday–Saturday
10 a.m. to 4 p.m.
(314) 577-0891

ALL ABOUT SPRING

LAUDE MONET'S GAR
at Giverny

Linnea
in Monet's Garden
Christina Björk & Lena Anderson
25th Anniversary Edition

Butterfly House

Photo by Da

green today
greener tomorrow

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MISSOURI BOTANICAL GARDEN
P.O. Box 299 • St. Louis, MO 63166–0299

PERIODICALS
POSTAGE PAID AT
ST. LOUIS, MO

CHINESE CULTURE DAYS
May 17–18 | Hours and tickets at www.mobot.org

photo by Rebecca Hensiek

bulletin calendar

March | April | May



Nature Connects
Art with LEGO® Bricks
May 24–September 7

Explore larger-than-life plant and animal sculptures as they take up residence at the Garden this summer.

Members get more!

Members get to preview the exhibit on Friday, May 23.

www.mobot.org/natureconnects



Daffodil Dash
Saturday, April 12
at Shaw Nature Reserve

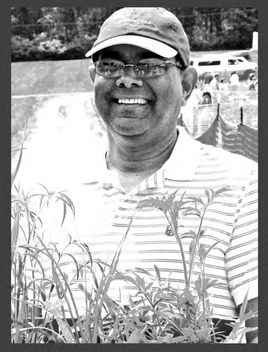
Join us for the inaugural 5K trail run at Shaw Nature Reserve with thousands of blooming daffodils. Proceeds benefit the Reserve. Don't want to get up early? Become a virtual runner!

www.shawnature.org

Gardening Night at Busch
Thursday, May 22 vs. ARI

Get a limited edition Cardinals Garden Gnome! Purchase tickets at **www.cardinals.com/theme.**

A portion of each ticket sold benefits the Missouri Botanical Garden.



Spring Wildflower Market
Saturday, May 10
at Shaw Nature Reserve

Members-Only Preview Friday, May 9

www.shawnature.org



www.mobot.org/events

2014 Orchid Show
South America

Now through March 23

Journey into a spectacular modernist garden inspired by the work of Brazilian landscape architect Roberto Burle Marx.

www.mobot.org



Perfect for Mother's Day

Mother's Day Brunch
Treat mom to brunch at the Garden and enjoy a special Mother's Day menu at Sassafras. Reservations required. Learn more at **www.mobot.org/events.**

Mother's Day at the Butterfly House
Visit the Butterfly House on Mother's Day, and mom will receive a free gift. For more information, visit **www.butterflyhouse.org.**

Give Mom the Gift of the Garden
Order your gift membership by April 20 to receive it by Mother's Day. Visit **www.mobot.org/membership.**

Chinese Culture Days
May 17–18

Enjoy this springtime celebration filled with Chinese art, music, history, and wonderful food!

www.mobot.org





St. Louis Garden Blitz
Ask the Expert
Saturday, March 1

www.mobot.org/classes

St. Louis Garden Tour
Sunday, June 8

Garden members and their guests can tour 12 lovely home gardens in St. Louis. Reserve your spot by Tuesday, May 27!

www.mobot.org/events



March 2014

average temperature: low 37°, high 55°
average precipitation: 3.4 in.

What's in bloom?


Witch hazel 'Old Copper'


Winter aconite


Orchid

2/1–3/23	Orchid Show: South America, *through March 23.* $ RVC
3/1	St. Louis Garden Blitz: Ask the Expert, 9 a.m. to 3 p.m. $ ☎
3/1	Trivia Night—Garden Style, 6 p.m. *Presented by Macy's.* $ ☎ RVC –SOLD OUT
3/1–3/31	March Morpho Mania, *through March 31.* BH
3/5	**Ash Wednesday**
3/10–3/14	Spring Sidewalk Sale, *through March 14.* GGS, BH
3/11	Members Day: March Morpho Mania, 10 a.m., 1 p.m., and 5 p.m. ☎ BH
3/15	See the Garden's float at the 45th Annual St. Patrick's Day Parade, starts at noon, Downtown St. Louis
3/17	**St. Patrick's Day**
3/22	Partners for Native Landscaping, 9 a.m. to 5 p.m. $ ☎ RVC
3/22–3/23	Sew Good and Trendy Trunk Show, GGS
3/25	Members Day: The Art of Container Gardening, 11 a.m. to noon ☎ ST
3/28–3/31	Summer Bulb Sale, *through March 31.* GGS
3/29–3/30	Doris I. Schnuck Children's Garden Seasonal Reopening, 9 a.m. to 3 p.m. *Presented by Macy's Foundation.* $ CHD



$5 OFF

Any $25 garden tools purchase.
JUST IN TIME FOR SPRING!

Not valid with any other coupons or sales except membership discount. One coupon per customer. Expires 5/1/2014. See shop for details.

GARDEN GATE SHOP

April 2014

average temperature: low 47°, high 67°
average precipitation: 4.1 in.

What's in bloom?


Japanese flowering cherry


Koreanspice viburnum


Large-cupped daffodil

4/4	Arbor Day Tree Giveaway, 9 a.m. to 5 p.m., KC
4/12	Members Event: Eggstravaganza, 10 a.m. to 1 p.m. $ ☎
4/12	Daffodil Dash, 9 a.m. $ ☎ SNR
4/13	Corporate Partners Day, 9 a.m. to 5 p.m.
4/13	**Palm Sunday**
4/15	**Passover**
4/18	**Good Friday**
4/20	**Easter**
4/20	Easter Brunch, 10:30 a.m., noon, and 1:30 p.m. $ ☎
4/22	**Earth Day**
4/23–4/26	**Herb Days** *Presented by the Garden Gate Shop and the St. Louis Herb Society.* *NEW IN 2014!* April 23: 4 to 7 p.m. RVC April 24: noon to 5 p.m. RVC April 25: 9 a.m. to 5 p.m. RVC April 26: 9 a.m. to 5 p.m. RVC
4/24	Member-Exclusive Shopping Hours: Herb Days, 9 a.m. to noon. RVC
4/24	Members Day: The Joy of Herbs, 11 a.m. to noon ☎ ST
4/23–4/26	Herb Sale, GGS
4/25	**National Arbor Day**
4/26	Earth Day, 10 a.m. to 3 p.m.
4/27	Tulip Trot, 7 to 9 a.m. *Presented by Macy's.* $ ☎
4/1–10/31	Plastic Pot Recycling begins, *through October 31.* MC www.plasticpotrecycling.org



May 2014

average temperature: low 67°, high 77°
average precipitation: 4.8 in.

What's in bloom?


Hosta


African daisy


Peony

5/2	Grapes and the Garden, 5:30 to 8:30 p.m. *Presented by Schnuck Markets, Inc.* $ ☎
5/3	Members Day: Children's Garden, 9 to 11 a.m. $ CHD
5/9	**National Public Gardens Day**
5/9	Members-Only Preview: Spring Wildflower Market, 4 to 7:30 p.m. SNR
5/10	Spring Wildflower Market, 9 a.m. to 4 p.m. $ SNR
5/11	**Mother's Day**
5/11	Mother's Day Brunch, 10 a.m., 11:30 a.m., and 1 p.m. $ ☎
5/14–5/18	Members' 20% Sale at the shops. GGS, BH, LS
5/17–5/18	Chinese Culture Days, 10 a.m. to 5 p.m. $
5/17	*Garden of Marvels* book signing with author Ruth Kassinger, 11 a.m. to 1 p.m., GGS
5/22	**World Biological Diversity Day**
5/22	Gardening Night at Busch Stadium, 6:15 p.m. $
5/23–5/25	Hosta Sale, GGS
5/23	Members-Only Preview: Nature Connects, 5 to 8 p.m. $ ☎
5/24–9/7	Nature Connects: Art with LEGO® Bricks, *through September 7.* $ www.mobot.org/natureconnects
5/26	**Memorial Day**
5/27–8/26	Members-Only Evening Strolling Hours, *Tuesdays Memorial Day through Labor Day.* 5 to 8 p.m.
5/28–8/27	The Garden remains open late on Wednesdays, *Memorial Day through Labor Day.* 5 to 8 p.m. Free admission after 5 p.m.



Don't forget!



Seasonal Openings

Saturday, March 29
Spring is here, and the Garden is the perfect place to welcome the season! The Children's Garden, Tower Grove House, Brookings Interpretive Center, narrated tram tours, and Terrace Café will reopen for the season.



Members Event: Eggstravaganza

Saturday, April 12
Win prizes and meet Bunny while experiencing the beauty of spring at the Garden. Make your reservations today! Call (314) 577-5118 or visit **www.mobot.org/memberevents.**



Plant Societies Shows and Sales

Get the latest information about your favorite plant society's show and sale by visiting **www.mobot.org/plantsocieties.**

KEY (All events take place at the Garden unless otherwise noted.)

BH	Butterfly House	KC	Kemper Center for Home Gardening
BHGS	Butterfly House Gift Shop	LS	Little Shop Around The Corner
CA	Cohen Amphitheater	MC	Monsanto Center
CBEC	Commerce Bank Center for Science Education	MH	Monsanto Hall (in RVC)
CHD	Children's Garden	RVC	Ridgway Visitor Center
CL	Climatron lawn	SNR	Shaw Nature Reserve
GGS	Garden Gate Shop	SP	Spink Pavilion
JE	Jordan Education Wing (in RVC)	ST	Shoenberg Theater (in RVC)

Sassafras
Members-only event
20% Member discount at the shops
☎ Reservations required
$ Fee required

photos by (front) Brian Mueller, Charles Schmidt, Tom Incrocci, Rebecca Hensiek, and Mary Lou Olson (this page) Lisa Francis, Christina Kelley, Brian Mueller, Rebecca Hensiek, Amanda Attarian, and Heather Marie Osborn

Missouri Botanical Garden

bulletin

Fall 2014 Vol. 102 No. 3 www.mobot.org



photo by Koraley Northen

President's Comment

As our planet's precious flora and fauna continue to be threatened by devastating and unsustainable human activities, it has never been more clear that we not only need to preserve intact and diverse wild places and the species they contain, but also to try to reverse the loss of natural habitats and repair some of the damage we have already done. As the building blocks of life, plants are a fundamental part of most ecosystems. At the Garden, it is both our passion and our responsibility to study and safeguard our world's plants and inspire others to do the same—from scientific research to home gardening and everything in between.

The Garden's work in aiding our fragile planet includes ecological restoration (see page 9). While this is an overwhelmingly large and complex task, it is one that we strongly believe in and share with our partners locally, regionally, and globally. Some of those partnerships can help determine when and where to collect seeds in the wild for our Seed Bank (see page 12), and others can lead to incredible discoveries, such as Dr. Edgar Anderson's journals that are now the basis of phenology and pollinator studies led by Garden Curator Dr. Peter Hoch and Maryville University's Dr. Kyra Krakos (see page 14).

In this Ecological Restoration issue, we hope you find inspiration to reconnect with nature and reflect on the importance of our natural ecosystems. We invite you to take small steps to help your neighborhood's biodiversity, such as removing invasives (bush honeysuckle comes to mind); to plant native species and provide habitats for pollinators in your backyard; and to enjoy the natural beauty around you with a visit to the Garden, Butterfly House, or Shaw Nature Reserve.



Dr. Peter Wyse Jackson,
President

As a Garden member, did you know:

- You receive reduced pricing for special events?
- You can enjoy evening walking hours on Tuesdays in the summer?
- You receive free admission for two adults and all children ages 12 and under to the Shaw Nature Reserve and Sophia M. Sachs Butterfly House?
- You receive free admission to the Children's Garden all day Tuesdays? (Open April–October)
- Special Members Days include exclusive events and activities, free tram rides, and discounts in the gift shops and café?
- You enjoy free or reduced-price admission to nearly 270 botanical gardens and arboreta in the U.S. and Canada?

These are only a few of your benefits. Visit **www.mobot.org/membership**, email **membership@mobot.org**, or call (314) 577-5118 to learn more.

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Garden Hours

The Garden is open 9 a.m. to 5 p.m. seven days a week except during holiday hours (November–January). Closed on Christmas Day. The Garden stays open to the public on Wednesday evenings from 5 to 8 p.m. from Memorial Day through Labor Day. Visit **www.mobot.org** for more information.

General public outdoor walking hours begin at 7 a.m. Wednesdays and Saturdays.

General Admission

$8 ($4 for residents of St. Louis City and County); children 12 and under are free. Garden members receive free admission (based on level).

Children's Garden: $5 for children; adults admitted free. ($3 for Garden member children.) Member children admitted free on Tuesdays. Open April through October.

Contact

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On the Cover

Native plants like this Missouri native butterfly weed (*Asclepias tuberosa*) are key to protecting biodiversity. Photo by JJ Mueller.

Credits

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photo by Claire Cohen

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To discover and share knowledge about plants and their environment in order to preserve and enrich life.

– mission of the Missouri Botanical Garden

News

In Memoriam: Arthur Ortenberg 1926–2014

A great friend to the natural world, Arthur Ortenberg, passed away on February 3. Art and his wife, the late Liz Claiborne, were passionate supporters of science and conservation. Art was deeply involved in the details of species conservation, which paired well with Liz's passion for animals.

The couple established the Liz Claiborne Art Ortenberg Foundation in 1987 to support conservation efforts around the world. After Liz's passing in 2007, Art was the driving force behind the foundation, supporting wildlife and wild places with zeal and dedication and promoting community-based conservation efforts in the developing world and western United States.

The Garden has been the fortunate recipient of support from the Liz Claiborne Art Ortenberg Foundation for many years. Foundation grants have totaled more than $2.5 million and supported research, training, and conservation projects led by Garden scientists in Bolivia, Ecuador, Madagascar, Tanzania, and other biodiversity hotspots.

In recognition of this exemplary support of conservation programs at the Missouri Botanical Garden and other research institutions across the globe, the Garden awarded the Henry Shaw Medal to the Liz Claiborne Art Ortenberg Foundation in 1999.



The generic name is a combination of the Quechua word *quipu* (record-keeping cords) and the Greek word *anthos* (flower). The *quipu* were used by pre-colonial Andean societies to encode information. (photo courtesy of Dr. Jürgen Homeier)

New Genus and Species Mark Herbarium Milestone

This year the Garden's Herbarium collection reached 6.5 million specimens with the addition of *Quipuanthus epipetricus*, a new genus and species described by Dr. Fabián Michelangeli of The New York Botanical Garden and Garden curator Dr. Carmen Ulloa. The single species known so far combines a unique set of characteristics that led the authors to describe it in a new genus published in the journal *Systematic Botany* in May.

The new genus and species, in the melastome family (Melastomataceae), was discovered in collaboration with The New York Botanical Garden after careful study in the herbarium and anatomic and molecular work. The rosette-like plants, some gathered more than three decades ago, did not match any currently known name in this diverse plant family and had been moved from one genus to another.

The specific name refers to the fact that all collections of this herb have been found growing on rocks. Only two populations are known from the foothills of the eastern Andes: one in Ecuador and the other in northern Peru. "The overall appearance of the flowers and fruits, arranged like knots on strings, and the puzzling combination of characters in this genus reminded us of this enigmatic record system used by Andean societies, long before the arrival of the Spanish writing system," Dr. Ulloa says.

Garden Receives Grant For Ebony Conservation

The Garden recently received a $375,000 grant from the Fondation Franklinia for the Global Ebony Assessment project that is set to start in July. The project aims to conserve rare and endangered ebonies in Mauritius, Rodrigues, and Madagascar, and establish a list of approximately 700 accepted ebony species around the world, which will be added to the World Flora Online.

Once the baseline list is completed, Garden staff will assess the species' conservation status based on the International Union for Conservation of Nature (IUCN) Red List criteria and collaborate with Botanic Gardens Conservation International to determine what ebony species are currently in cultivation in botanical gardens.

The project will also focus on describing an estimated 130 new species of ebonies that occur in Madagascar and documenting

all the ebony species in the Garden's conservation sites there to target them for cultivation and restoration purposes. In Mauritius and Rodrigues, the Garden will collaborate with the Mauritian Wildlife Foundation to study population genetics of the rarest and most threatened ebony species to inform conservation and habitat restoration strategies. In addition to their economic value, Ebenaceae are often critical species in forests, and their hard, black wood makes them particularly susceptible to unsustainable exploitation.

New Program Focuses on Biodiverse Ozark Plateau

Thanks to a generous lead gift from David Orthwein and additional gifts from Shaw Nature Reserve volunteers, the horticulture staff at the Reserve started collecting seeds, planting, recording data, and observing native Ozark plants as part of the Ozark Plateau Seed Collection Program. The project focuses on preserving the genetic diversity of native Ozark plants through both long-term seed storage at the Garden's Seed Bank and trial gardens to develop Ozark plants for native landscaping.

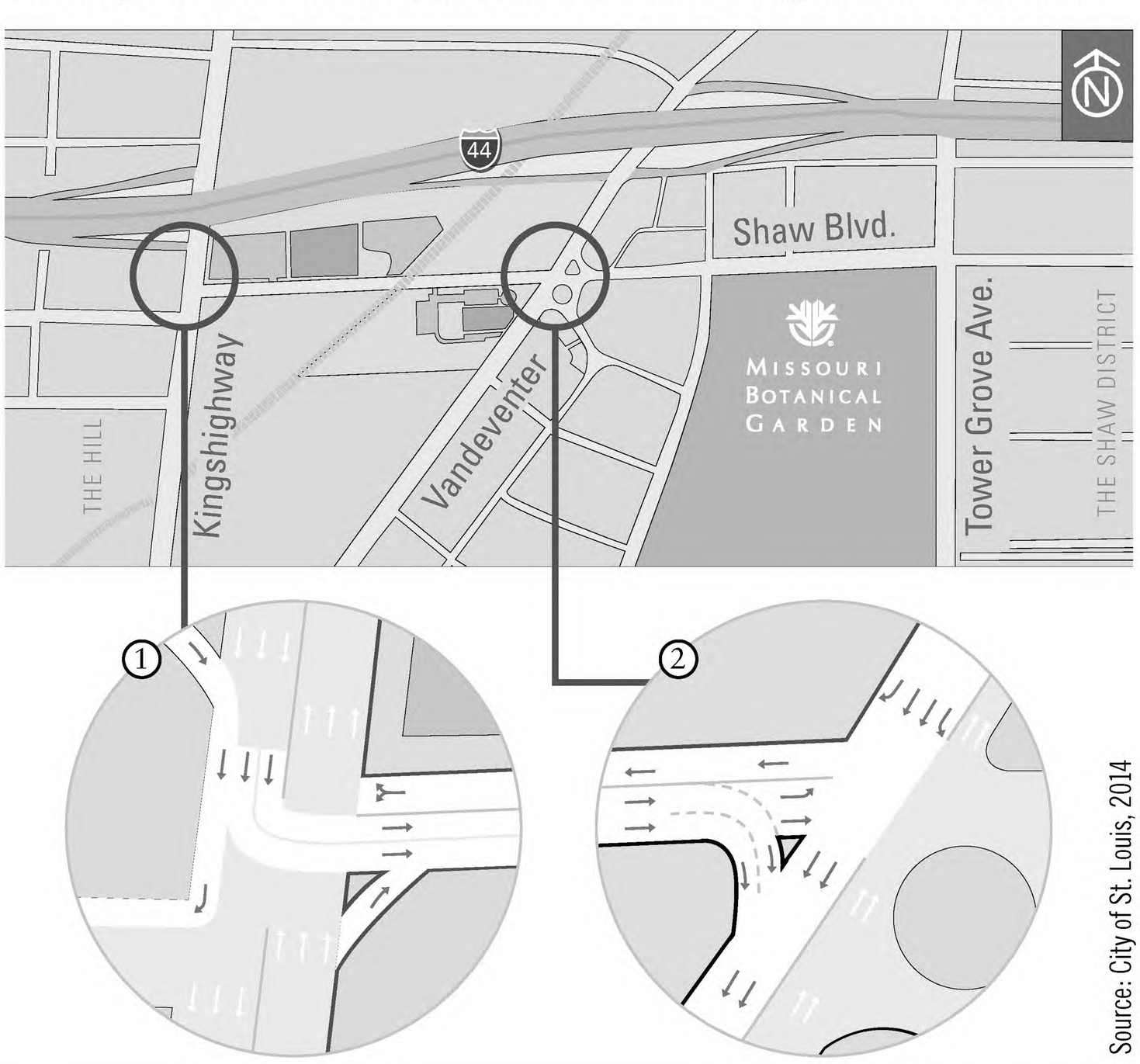
Seed Bank and Reserve staff will work together to prioritize species and collect seeds in this highly biodiverse region. Most of the plants in the Ozark Plateau have never been used in horticulture or been collected for *ex situ* conservation. Portions of the seeds collected will be planted at the Reserve's new trial gardens. The fenced area will house these plants for three to five years, and they will be evaluated for shade tolerance, erosion control, flood and salt tolerance, wildlife potential, maintenance reduction, and beautification. The staff will then publish the test results and build demand for the plants that will perform best in a landscape setting, says Scott Woodbury, Whitmire Wildflower Curator of Native Plant Horticulture at the Reserve. "We've done this informally over 20 years," he says, "and many of our plants are now being sold in nurseries."

Planning Your Visit: Roadwork Around the Garden

As you plan your visit to the Garden this summer, please note that the City of St. Louis Street Department will be doing roadwork on Kingshighway at I-44. Please use the S. Vandeventer exit (#287 B).

① Southbound traffic on Kingshighway will have two left-turn lanes onto eastbound Shaw Blvd., but **traffic exiting I-44 at the Kingshighway exit (#287 A) will only be able to turn right onto westbound Shaw Blvd.**

② Shaw Blvd. will have two eastbound lanes and one westbound lane. It will also have two right-turn lanes onto S. Vandeventer. Please see map for more details and visit **www.mobot.org** for more updates.



Source: City of St. Louis, 2014

News cont.



Garden horticulturist David Gunn collects seeds in the Ozarks. Specimens collected in this region will be stored in the Seed Bank or used in landscape trials at the Reserve. (photo by Teresa Pafford)

Collected seeds that were not planted in the trail gardens will be stored in the Seed Bank, supporting its mission to collect the entire eco-regional Missouri flora. The seeds will not only be part of the Garden and Reserve's living collections but also be available for future conservation and restoration needs. See page 12 to learn more about the Seed Bank or visit **www.mobot.org/seedbank**.

Trip Highlights Conservation Opportunities

Four Garden representatives traveled to Madagascar and Mauritius as part of the Garden's global conservation and restoration work. Garden President Dr. Peter Wyse Jackson; Dr. James Miller, Senior Vice President of Science and Conservation; Andrew Wyatt, Vice President of Horticulture; and Dr. Christine Edwards, Conservation Geneticist, visited the island nations during a two-week trip in February.

The first stop was Madagascar, home to one of the Garden's largest research programs. There, the group visited two of the conservation sites that the Garden oversees—Ananalava and Ankafobe. Dr. Miller, who spent more than two years in Madagascar almost eight years ago as a Garden researcher, noted how important ecological restoration is becoming in the program's future conservation work. "It's not just an environmental issue; it's a livelihood issue for people," he says. "We are beginning at our sites to change the direction and have forests regenerate to directly affect people's lives as well as have a global environmental impact."

The group then traveled to Mauritius, an extremely biodiverse yet ecologically devastated place. With approximately 80% of the 273 endemic plant species in Mauritius being endangered—some down to just a handful of individuals—the situation is critical but also a great conservation opportunity for the Garden. A new collaboration with the Mauritian Wildlife Foundation, which hosted the group during their stay, will allow the Garden to provide its plant science expertise with tools such as GIS mapping, propagation tests, and staff training.

The visit to Mauritius was a particularly special one for Dr. Wyse Jackson, who started a native plant conservation program there in the 1980s. "It is because of my work in Mauritius that I became interested in plant conservation back in 1985," he says. "For me to return 30 years later was a chance to have the Garden involved in work that I had begun several decades ago."



Accompanied by Dr. Carl Jones, Scientific Director of the Mauritian Wildlife Foundation, Dr. Wyse Jackson visited the same *Hyophorbe amaricaulis* he worked with in the 1980s. It is the last known living specimen of this species. (photo by Andrew Wyatt)

New Missouri Butterfly Monitoring Network

The Sophia M. Sachs Butterfly House recently founded the Missouri Butterfly Monitoring Network (MBMN). The MBMN was started with guidance from the Illinois Butterfly Monitoring Network, which has been monitoring butterfly populations for nearly 25 years. The Butterfly House will also consult with an analytics team from the University of Maryland that processes the data gathered from North American butterfly monitoring programs and present it to researchers.

Recruitment for volunteers will begin soon, and they will

assist the MBMN to monitor butterfly population trends across many different ecological areas in Missouri, focusing on native prairie and prairie restoration sites. The MBMN uses strict monitoring protocols so the scientific data and trends that emerge from the network can be pooled with network data from other states. This data will be shared with researchers focusing on biodiversity, endangered species, habitat restoration, conservation, and more.

Up to the Challenge: Garden Digging into Data

The Missouri Botanical Garden was one of the winners of the third Digging into Data Challenge, an international competition aimed at developing innovative tools to use large-scale data in the humanities and social sciences. The Institute of Museum and Library Services (IMLS), one of the 10 international research funders of the challenge, announced in January that it awarded $174,426 to the Garden's Mining Biodiversity (MiBio) project.

The project's goal is to integrate text mining methods, visualization, crowdsourcing, and social media into the Biodiversity Heritage Library (BHL), which is developed and maintained by the Garden, and allow users to explore search results according to multiple information dimensions. "The goal is to transform BHL into a next-generation social digital library resource that facilitates the study and discussion via social media integration of legacy science documents on biodiversity by a worldwide community," says William Ulate, Technical Director at BHL and Senior Project Manager of the Garden's Center for Biodiversity Informatics.

The MiBio project is an international collaboration between the National Centre for Text Mining in the United Kingdom, Dalhousie University's Big Data Analytics Institute and Social Media Lab in Canada, and the Garden. The Encyclopedia of Life and the Smithsonian Institution will also contribute to the project.

New Digital Experience for Tower Grove House

When Henry Shaw's historic Tower Grove House opened to the public in 1953, it became an instant must-see for Garden visitors. While staff and volunteer interpreters are on hand to enrich the tour, the inside of the house is not always open or available to everyone.

Starting with its seasonal opening in late March, Tower Grove House now offers a digital experience for visitors. Tablets loaded with the virtual tour are available on-site during normal operating hours (Wednesday through Sunday from 10 a.m. to 4 p.m.), or visitors can download the virtual tour as a PDF and view it from their personal tablets any time, which can be especially helpful for large groups who otherwise might miss this attraction.

"This new experience is part of the Garden's efforts to provide a more inclusive experience for all of our visitors," says Jennifer Wolff, Interpretation Manager at the Garden. The tour contains photos and captions showcasing everything from the parlor and dining room to the basement and Shaw's bedroom. Visitors can also learn more about Shaw, the house's many uses through the years, its architect George I. Barnett, and more.



photo by Jonathan Knobelock

The on-site tablet is available upon request at Tower Grove House. To plan your visit, learn more, and download the PDF, please visit **www.mobot.org/tghouse.**

Inviting All Teens: New Program Offerings

The Garden is expanding its education offerings for teens with the new Teen Reserve Environmental Education Service (TREES) and Youth Garden programs, both part of the Garden's Teen Network. They are offered to area teenagers in addition to the existing Ecology in Action (ECO-ACT), Students As Garden Educators (SAGE), and Shaw Institute for Field Training (SIFT) programs.

The TREES program offers high school students the opportunity

News cont.

to learn more about their natural surroundings by assisting Shaw Nature Reserve staff with special events and by teaching younger children who participate in ecology programs at the Reserve.

The Youth Garden program starts this June and runs for 10 weeks, giving teenagers an opportunity to plan, plant, and care for an existing school food garden at St. Margaret of Scotland School. "We are excited to expand hands-on learning opportunities for teens," says Meg Hoester, Supervisor of High School and Community Student Programs. "Getting students excited about science, nature, and the outdoors is part of our mission, and these new programs offer two different and fun approaches." Learn more at **www.mobot.org/teenprograms**.

How To: Build a Salt Box

PLANTING the future

By Elizabeth Spiegel, Garden Beekeeper



A salt box is a chemical-free, easy pest management system to control the small hive beetle in beehives. Want to learn more? Visit **www.mobot.org/plantingthefuture** to see more photos and to download the planning sketches for this 4' x 8' sand box. See page 15 for more about the overall benefits of a salt box.

Materials:

Drill and screws

Cutting saw

Pressure-treated plywood:

- 3 2" x 6" x 8'
- 1 4' x 8' x ½"
- 2 4" x 4" x 8'
- 5 2" x 4" x 8'

14 bags (0.5 cu. ft.) of pea rock

2 bags (50 lbs.) of rock salt

3 cu. ft. of compost or topsoil

Directions:

Cut the three boards (2" x 6" x 8') and drill around the base (4' x 8' x ½") to create the box.

Drill three half-inch holes at the bottom of the plywood base so water can drain.

For the elevated stand's legs, cut each of the two boards (4" x 4" x 8') in four equal pieces.

Cut four of the five boards (2" x 4" x 8') to 6' long. Keep the remaining 2' pieces for leg support. Cut the last board (2" x 4" x 8') in equal pieces of 7" each and connect everything by drilling them between the two sets of legs.

Place elevated stand in the box and fill it with the pea rock and rock salt. Cover with at least 1" of compost or topsoil.

Place beehives on elevated stand.

Gardening Q&A



How do I rejuvenate or repair dead spots in my zoysia grass lawn?

In St. Louis, the best time to do it is from late May through June. This is also the correct time of the year to dethatch or core aerate an established zoysia grass lawn.

If the lawn area that needs renovation is completely dead, the old sod will need to be removed and discarded, and the soil will need to be properly prepared prior to plugging or laying new sod.

If the damaged turf has a mix of live and dead areas, you can add plugs here and there to fill in the thinner areas.

If damage doesn't occur or isn't noticed until late summer or early fall, replanting of the zoysia grass needs to wait until the following year; it goes dormant from first frost to mid-May and cannot be sodded or plugged in the fall. If looking at the dead areas for another seven to eight months is unacceptable, you can power-rake and overseed the dead areas with a cool season "temporary" grass. With this option, make sure to kill off the cool season grass with a glyphosate product before embarking on the zoysia renovation process.

Learn more with our "Lawn Problems: Zoysia" visual guide available at **www.mobot.org/gardeninghelp**.



Tallgrass prairie now grows on over 250 acres at Shaw Nature Reserve. It was restored on formerly wooded, cleared, farmed land. (photo by Rebecca Hensiek)

Reconnect With Nature

The ultimate survival of biodiversity depends ecological restoration.

Former Garden director and plant researcher Dr. Edgar Anderson called it "the green lull"—that period in the middle of summer between all the excitement of spring and the late summer bloom. It's a time to appreciate the natural world around us—trail hiking, picnicking, outdoor reading—and reflect not just on its beauty but on its fragility as well.

An ecosystem consists of organisms interacting with each other and with their environment to sustain life. As members of an ecosystem, humans have unavoidably had an impact on the environment—in recent history, unfortunately, to extremely harmful degrees. Our dependence on nature is the reason why we need to not just protect but also restore ecosystems to their intended sustainable function.

Ecological restoration is the process of assisting the recovery of an ecosystem that has become damaged, destroyed, or degraded. It's not merely reintroducing a plant or animal species or eliminating invasive plants; it is an all-encompassing, continuous effort to address the ecosystem's needs from a holistic perspective. And while the benefits are certainly ecological, the personal and cultural benefits for people are undeniable, especially for our well-being and future livelihoods. The food we eat, the water we drink, the air we breathe, and the materials that clothe and shelter us all depend on sustainable, biodiverse ecosystems.

As a leader in plant science, the Missouri Botanical Garden has a unique set of skills to help ecosystems locally, regionally, and globally. "We recognize that we can no longer simply protect our pristine wild habitats," says Garden President Dr. Peter Wyse Jackson. "The ultimate survival of biodiversity is going to depend on scientifically based, practically implemented ecological restoration." The Garden, he says, has the scientific base and understanding of plants; the practical skills to propagate, grow, and reintroduce plant species and understand their needs; and the advocacy and educational role to promote a greater need for ecological restoration worldwide.



With help from the Army Corps of Engineers, the Reserve created an 85-acre wetland mitigation bank that will help ease impacts on what's considered the most biologically diverse of all ecosystems. Revenue generated from this wetland "bank" will be used for ecological restoration activities. (photo by John Behrer)

Scientific Understanding of Plants

With an extensive network of plant scientists and research associates, the Garden is recognized as one of the leaders in botanical research and conservation worldwide. As experts in plant taxonomy, Garden scientists discover, describe, and study plants all over the world. This knowledge can later be used to effectively identify species that are key to restoring an ecosystem. Conserving rare or endangered species is also crucial to ecological restoration, preventing rapid loss in biodiversity.

This knowledge in turn complements the work done in both the Garden's Seed Bank and new Plant Conservation Genetics Laboratory. The Seed Bank actively collects seeds in the wild that are of conservation importance or that will be used for propagation and reintroduction purposes in the future (see page 12). The Garden's new genetics lab assists in identifying and studying plants of conservation concern.

Restoring an ecosystem also requires knowledge of invasive species and the best ways to control them. Invasive, usually non-native plants are one of the greatest challenges in ecological restoration. Their growth and spread are not hampered by natural enemies or by limited breeding systems. Ideally, invasives should be eradicated, but this has proven impossible or too impractical. The focus has been to control them, says Dr. James Trager, Restoration Biologist at Shaw Nature Reserve, through methods that range from manual pulling and well-timed mowing to herbicide treatments and prescribed burning (see sidebar).



(photo by Dan Brown)

Prescribed Burning

Described as the most useful tool in the ecological restoration "tool box," prescribed burning can stimulate growth and suppress invasive species. It is most commonly used in prairies, but it has also been used in glades, oak savannas, and woodlands.

While fire may result in large scale mortality of invertebrates and negatively affect some birds, prescribed fire, as opposed to wildfires, is considered beneficial to the vegetation. It kills invasive plants while increasing shoot production, flowering, and fruit-set in native perennials, and improving seeds' germination success. Responsible burn managers must balance the potential negative effects and the overall benefits in biodiversity that result from prescribed burning.

Plant Propagation and Reintroduction

The Garden's horticultural expertise also plays an important role in ecological restoration. It starts with wild-sourcing the plants for the Garden's Seed Bank and living collections. Collecting plants in the wild supports plant science and conservation, says Vice President of Horticulture Andrew Wyatt, because it provides information about the location and growing environment that will be used for future propagation and reintroduction.

Collected seeds are propagated in controlled environments for scientific study, which provides vital information for conserving the species, including the development of protocols to reintroduce it to its native habitat. For example, the Garden's Center for Conservation and Sustainable Development (CCSD) has been working on the conservation, propagation, and reintroduction of rare plants in the southeastern United States, such as Pyne's ground plum in Tennessee.





(above) CCSD's Dr. Quinn Long and Dr. Matthew Albrecht reintroducing Pyne's ground plum (*Astragalus bibullatus*) in Stones River National Battlefield in Tennessee. Seedlings were propagated at the Reserve from frozen seed in the Seed Bank. (photo by David Kennedy)

(left) Once woody invasives are controlled, restored glades are characterized by short, herbaceous vegetation such as Missouri native purple coneflowers. (photo by Bob Monaghan)

Community Advocacy and Education

While the Garden strives to be an international, regional, and local model of ecological restoration, the task is enormous, and partnerships with other organizations and community engagement are vital. Take, for example, the partnership between Shaw Nature Reserve and the Missouri Department of Conservation (MDC) in restoring the Reserve's wetlands, prairies, glades, and forests. The Reserve also has community outreach programs that range from the Native Plant School for home gardeners to the Shaw Professional Landscaping Series at Alberici for commercial landscapers.

The Garden is leading efforts to bring awareness to the importance of stormwater management with initiatives such as the RainScaping Guide and restoration projects done by the Garden's Deer Creek Watershed Alliance. It is also the driving force behind *BiodiverseCity St. Louis*, a community-wide initiative to promote urban biodiversity in the region.

The goal is for communities to value, plan for, and care for local nature in a way that benefits all, whether it's capacity building in Madagascar or inspiration from the demonstration gardens at the Garden, the Reserve, or the Butterfly House. Clean water, clean air, good soil, and food supply—by-products of ecological restoration—are basic to a community's economic survival, sustainable growth, and overall health. Plants are the basis of life, and they hold the key to ecological restoration. Now is the time to reconnect with nature.



Delimiting the Ankafobe Forest community reserve with local stakeholders is part of the community engagement efforts in Madagascar.

Learn more! Find out more about ecological restoration during the **Public Symposium on Ecological Restoration** on July 16 at the Garden. See page 18 for more information or visit **www.mobot.org/events**.

Direct Deposit

The Seed Bank Provides More Than Just Storage; It Safeguards Biodiversity for the Future.



Invasive species, climate change, and human interference are some of the threats affecting ecosystems around the world. To supplement its on-site plant conservation locally and globally, last year the Missouri Botanical Garden expanded its efforts with a new Seed Bank, located at Shaw Nature Reserve. By the end of 2013, the facility secured 276 wild-sourced accessions; 127 of those represented Missouri plants, supporting the Seed Bank's mission to collect and store the entire Missouri eco-regional flora.

While crop plants and their wild relatives have been the focus of seed banking for a long time due to concerns about food security, it is only in the past few decades that organizations have begun to focus on banking the full diversity of wild plants. This means that while there is plenty of information about crop plants and protocols for their seed collection, storage, and propagation, much work still needs to be done to understand the similarities and differences between seed banking crops and wild plants. Preserving the latter continues to be an important part of ecological conservation.

Thank you for your support! Ann L. Case, Dr. and Mrs. William S. Knowles, the Edward K. Love Conservation Foundation, Mr. David T. Orthwein, and Mr. Blanton J. Whitmire.

What is seed banking?

Seed banking is a valuable conservation tool that enables the long-term storage of genetic diversity of a large number of plant species. It involves collecting, cleaning, drying, recording, and storing seeds at low temperatures for future conservation and restoration uses. This highly meticulous process slows down a seed's metabolic process to keep it viable for future use. The goal is to collect from a robust plant population to capture a wide diversity of genetic material. That, however, may not be possible with endangered species, so the challenge is to ensure the collection and storage of its limited, fragile population will allow propagation and reintroduction to its native habitat in the future.

What types of seeds can be stored?

There are three storage behaviors for seeds: orthodox, intermediate, and recalcitrant. Seed storage behavior is determined by the seed's ability to withstand the dry and freezing conditions of traditional seed banking. Orthodox seeds usually come from temperate regions and can survive in low moisture levels and low temperatures. Recalcitrant seeds, including those of oaks and orchids, are mostly from the tropical regions and are very sensitive to drying and freezing. These seeds need alternate storage methods, such as propagation in the Garden's living collections. Intermediate seeds can be sensitive to either condition, but most seeds tend to fall in one of the two previous categories.

How does the Seed Bank choose the plant species for seed collections?

Seed Bank Manager Dr. Ginger Allington and her staff and volunteers use three factors to prioritize their seed collections:

- **Conservation concern:** The Garden's commitment to plant conservation is by far the top reason for collecting and preserving a plant's seeds. The Garden not only helps identify and collect threatened plant specimens but also assists in the propagation and reintroduction of these species (see page 11).
- **High fidelity to a certain habitat:** Even if the plant is not considered endangered, it may be crucial to the survival or the restoration of a fragile habitat.
- **Display and educational value:** The display gardens are carefully planned and maintained by the Garden's horticulturists. A wild-sourced plant can spark conversations and encourage people to learn more about plants.

What are some of the challenges of seed banking?

Because the Seed Bank only stores wild-sourced seed, determining where and when to collect is challenging. Establishing the location for a seed collecting trip is difficult due to the limited amount of information regarding a plant population's size and location. The recently completed *Flora of Missouri* is helpful to determine locality, but there are not many botanical surveys available to know if a wild plant population is sizeable enough to justify a collection.

Deciding when to collect seeds is even more difficult. For a specimen to be considered prime for seed banking, the seed has to be collected when it is mature. Timing is everything, and the Seed Bank staff relies on a network of people around the state to help establish the best times and places to collect.

You can help! Support the Garden's Seed Bank and its conservation and restoration efforts. Learn more and donate at **www.mobot.org/seedbank**.



Seed banking: Step by Step

1) **Collecting:** Staff aims to collect no more than 20% of the seed available in a plant population to avoid impacting it negatively by collecting too much. They also record important data that include a detailed description, photographs, location, phenology, and habitat.

2) **Drying:** In addition to keeping seeds dry in breathable containers during the collection process, the staff later places collections in desiccation chambers to fully dry the seed before storage.

3) **Cleaning:** The cleaning method will depend on the species. Different sizes and shapes call for different approaches to separate the seed from the rest of the plant material collected. It can range from using perforated trays and vibrating paper to grating against rubber.



4) **Testing viability:** Assessing a seed's baseline viability will provide valuable information for future propagation, such as breaking dormancy and best environmental conditions for growth. The most straightforward method is a germination trial, which can take months, simulating the seed's original environment conditions.

5) **Storage:** Once the seed has been dried, it is stored in freezers in four-ply foil bags, where they will stay for as little as a few decades to hundreds of years.



Butterfly House



The Butterfly Garden features native plants like prairie dock (*Silphium terebinthinaceum*) that attract pollinators. (photo by JJ Mueller)

The relationship between pollinators and flowering plants is unique—one can't survive without the other. In fact, more than 85% of flowering plants depend on pollinators, meaning most natural ecosystems would collapse without them. However, most plants and pollinators don't have monogamous relationships. Ecosystems have a complex network of pollinators to account for small environmental and ecological changes in temperature, bloom time, pollinator population, etc.

Pollinators Matter

Pollinators come in all sizes and shapes—from birds and bats to butterflies and bees. Honeybees are the most economically important pollinator of all. In the United States, honeybees contribute more than $14 million to the crop production. Several key crops such as almonds, apples, berries, clover, and alfalfa depend on animal pollination. These crops feed both grazing animals and humans, which means we depend on pollinators for every third bite of food we eat.

Just as flowering plants and pollinators mutually benefit from their relationship, they are mutually affected by their environmental threats. A combination of pests, exposure to pesticides, invasive species overtaking native plants, and climate change has resulted in significant pollinator losses. Some plant species are becoming endangered or extinct because of the decline in pollinators.

Planting native species in home gardens, sidewalks, corporate parks, and other city landscapes is one way people can help sustain pollinators—local and migrating—and overall biodiversity. The Sophia M. Sachs Butterfly House, for example, has started handing out seed packets of Missouri native milkweed (*Asclepias*) during special events to encourage home gardeners to plant native plants that help pollinators like the migrating Monarch butterflies. The outdoor Butterfly Garden also features plants that were carefully selected to provide a habitat for pollinators.

Pollinators and Conservation

The Missouri Botanical Garden and Maryville University have partnered with Shaw Nature Reserve to study the impact that climate change has had on plants' phenology and on pollinators. The research focuses on comparing historical and current climate and pollinator data. While having both of these data sets available is extremely rare, the Reserve offers an extraordinary opportunity for this project. It is a natural area that has been managed but not highly developed, and this makes it possible to gather current data to compare it with historical information. The latter is comprised

Shaw Nature Reserve



Dr. Krakos (middle) and her team spent the last two summers at the Reserve doing pollinator research.



Native plants such as this New England aster (*Symphyotrichum novae-angliae*) at the Reserve attract pollinators that include the painted lady butterfly. (photo by JJ Mueller)

of climate data from the National Climatic Data Center in nearby Union, Missouri, as well as journals from former Garden Director Dr. Edgar Anderson. Recorded during his weekly walks at the Reserve from 1937 to 1942, these recently discovered records contain detailed observations of approximately 105 plant species. "It is an incredibly precious data set to uncover," says Dr. Kyra Krakos, Associate Professor of Biology at Maryville University and research associate at the Garden.

This summer, Dr. Krakos and her team will continue to work alongside Garden researchers Dr. Peter Hoch and Dr. Nicole Miller-Struttmann, studying and comparing current plant phenology with Dr. Anderson's records. The findings so far have shown that as the temperatures have increased in recent years, almost all the observed flowering plants have either bloomed at different times than previously recorded or bloomed for longer periods of time—some as much as four and a half weeks longer than normal.

This causes a significant disruption in the dynamics between plants and pollinators, Dr. Krakos says, whether that means plants not being in bloom when the pollinator hatches or overwhelming pollinators with too many options as more flowers bloom at the same time.

The research project, set to last three to five years, will continue this summer with Dr. Krakos and her team focusing on 15 to 20 plant species and their pollinators. They will compare pollinators that visit many species (generalists) with those that visit few (specialists) to see if phenology shifts impact them in different ways. They will also gather pollination data for multiple plant species by studying pollination visits, gathering and analyzing pollen counts on the insects, and quantifying reproductive success in those plants. Comparing what things were like in the past with what they are like in the present, she says, can affect our management, conservation, and personal decisions to preserve our fragile planet.



Pest Management System: Salt Box for Beehives

The small hive beetle is a pest that crawls up in the beehive and lays eggs in the wax. This affects the existing wax and forces the bees to use more energy to build it and to herd the beetles out of the hive, hampering the hive's overall health and efficiency.

The idea behind a "salt box" is that the small beetle larvae will be tricked into thinking that they can pupate in the top layer of soil or compost, but once they hit the pea rock and salt mixture underneath, they can't pupate or back up. This effectively eliminates a crucial stage in their life cycle and prevents them from returning to the beehive every year.

Are you a backyard beekeeper? See page 8 to learn how to build your own salt box.

Seen at the Garden



















photos by Dan Brown and Kerri Carter.

Events

LEGO® Brick Buildtanical Challenge

Online May 1–June 30; Finals Saturday, July 12; 10 a.m. to 4 p.m.; Monsanto Hall

Upload a photo of your nature-inspired LEGO® brick creations to our website, and we'll share it on the Garden's social media pages. The top 10 sculptures in each category will be on display, and exhibit creator Sean Kenney will choose one winner in each category. Prizes will be awarded to the winners. For more information, visit **www.mobot.org/buildtanical**.

Nature Connects: Meet the Artist

Saturday, July 12; 2 p.m.; Shoenberg Theater

Meet Sean Kenney, the creator of Nature Connects: Art with LEGO® Bricks. The New York-based artist will discuss his creative process and what it's like to have the coolest job in the world! Included with Garden admission. Seating is limited.

Illinois Appreciation Week

June 8–14; 9 a.m. to 5 p.m.

Illinois residents receive half-price daytime Garden admission (a $4 value); a 10% discount in the Garden Gate Shop and Little Shop Around the Corner; and 20% off memberships purchased this week.

Firefly Festival

June 11, 18, and 25; 8 to 9:30 p.m.; Butterfly House

Join us for firefly crafts, a snack, games, and glow walks in the conservatory. Wrap up the evening with an outdoor journey to see real fireflies. Please bring one flashlight per person. $10 members; $12 nonmembers. To register, please visit **www.mobot.org/classes**.



Now–September 7

Explore larger-than-life plants and animals made from **LEGO®** bricks as they take up summer residence in our world-famous Climatron®. $4 members; $3 member children; $10–$14 nonmembers; $5 children. Includes regular Garden admission plus exhibit. For more, visit **www.mobot.org/nature connects**.

With support from Christner Inc. Additional support from Ameren and Mercy Kids.

Be a Kid Again

Friday, June 20; 6 to 8:30 p.m.; Children's Garden

Enjoy spirits and special cocktails from local distilleries as you explore the Children's Garden. Guests must be 21 years of age. $25 members; $35 nonmembers; $15 designated driver. Registration required: **www.mobot.org/beakidagain**.

Desert Show: Plants of South Africa & Madagascar

June 28–July 27; 9 a.m. to 5 p.m.; Orthwein Floral Display Hall

The exhibit features plants rarely seen on display from the arid regions of South Africa and Madagascar, emphasizing the extraordinary biodiversity in these floral hotspots. It also highlights the work being done to preserve these unique habitats. Garden admission plus $5; free for members.

Sponsorship provided by the Henry Shaw Cactus and Succulent Society.

Breakfast with The Very Hungry Caterpillar

July 18–19; 9 to 10 a.m.; Butterfly House

Enjoy a smorgasbord of all The Very Hungry Caterpillar's favorite foods, meet live caterpillars and butterflies, listen to readings of *The Very Hungry Caterpillar*, and take home a souvenir photo! $8 members; $10 member children; $10 nonmembers; $12 children. Registration required: **www.mobot.org/classes**.

Public Symposium on Ecological Restoration

Wednesday, July 16; 9 a.m. to 5 p.m.; Ridgway Visitor Center

Experts from around the world, including representatives of the Ecological Restoration Alliance of Botanic Gardens, will share contemporary issues and innovations in ecological restoration. Free and open to the public. No registration required.

Bug Hunt

July 19–20; 6:30 to 9 p.m.; Butterfly House

Explore the world of insects by going outside with them. Each child can play exciting games and complete crafts to take home. Adults will be able to pick up information on attracting butterflies to their gardens and building native bee houses. Bug hunts will be led by staff entomologists in the surrounding park land. Field sessions will be ongoing throughout the evening, with staff on hand to identify bugs you catch. $10 members; $12 nonmember. Registration required. To register, visit **www.mobot.org/classes**.



Henry Shaw's Birthday

Thursday, July 24; 9 a.m. to 5 p.m.

Celebrate Garden founder Henry Shaw's 214th birthday with free admission for all visitors.

Flower Power Fun Run

Sunday, August 17; 7 to 9 a.m.
Join the Young Friends of the Garden for a summer 5K fun run! All proceeds benefit the Doris I. Schnuck Children's Garden. Runners receive a commemorative T-shirt. $30 members; $40 nonmembers. Registration required: **www.mobot.org/flowerpower.**

Whitaker Music Festival

Wednesdays, June 4–August 6
Concerts at 7:30 p.m.
Free admission after 5 p.m.

JUNE

4 Peter Martin Quartet
11 Al Holliday and the East Side Rhythm Band
18 Marsha Evans and the Coalition
25 Javier Mendoza

JULY

2 Old Salt Union
9 Big Brother Thunder and the Master Blasters
16 Nigel Mooney
23 Augusta Bottoms Consort
30 Melissa Neels Band

AUGUST

6 Gene Dobbs Bradford Blues Experience

Funded by
WHITAKER FOUNDATION

Green Homes Festival

Saturday, June 7;
9 a.m. to 4 p.m.;
Center for Home Gardening
Celebrate sustainable living with the whole family in this festival of learning, playing, and engaging with local sustainability experts. Check out more than 70 exhibitors and explore home improvement ideas and plant based options for living greener. Plus enjoy music, food, shopping, and more. Included with Garden admission.
Presented by Ameren Missouri.



JUST FOR MEMBERS



Member Event: Desert Show Preview

Friday, June 27; 5 to 8 p.m.
This evening includes a members-only viewing of the 2014 Desert Show: Plants of Southern Africa and Madagascar. Enjoy a special discount in the Garden Gate Shop, dining in Sassafras café, and a cash bar. Join or renew your membership at this event and receive a 20% discount. Admission is free.

Member Event: Family Picnic

Thursday, July 17; 5:30 to 8:30 p.m.
Bring a waste-free picnic or purchase picnic fare on-site. Enjoy music, entertainment, face painters, crafts, balloon artists, and a chance to play in the Children's Garden after hours! Reservations required: (314) 577-5118 or **www.mobot.org/memberevents.**

Members-Only Tuesday Nights:

Tuesdays, Memorial Day through Labor Day; 5 to 8 p.m.
All summer long, the Garden is open for members only on Tuesday evenings. Enjoy the beauty of the Garden and these extra benefits:

- FREE Children's Garden admission
- Themed, self-guided tours each week
- Nature Connects exhibit open *(admission charges apply)*
- Café Flora in Spink Pavilion
- Games with the St. Louis Chess Club
- FREE Desert Show admission, June 28–August 3
- FREE Garden History Series presentations, July 22 and 29
- FREE Science:30 programs, June 10, July 8, and August 12

History Series and Science:30 programs feature a different topic each night and require reservations. For more details, visit **www.mobot.org/membertuesdays.**

photos by Kevin Kersting and Dan Brown

Shop & Dine

10th Anniversary Sale

June 1–30; Tuesday–Saturday; 10 a.m. to 4 p.m.; Little Shop Around the Corner

Join the Little Shop Around the Corner as they celebrate their 10th anniversary as one of the area's favorite antique and collectible shops! All Garden members will receive an additional 10% off their purchase during the month of June. See shop for more details.

Street Food Nights

Wednesday nights during Whitaker Music Festival; June 4–August 6

This summer, listen to your favorite music artists while you enjoy our new street food offerings such as fish tacos, falafel, hot dogs, and more. Beer, wine, and specialty cocktails will continue to be available for purchase on-site.

Father's Day Bonsai Specials

June 14–15; 9 a.m. to 5:30 p.m.; Garden Gate Shop

Celebrate Father's Day with us! Buy a bonsai for dad and receive an additional 10% discount off any other item in the shop. See shop for details.

Sidewalk Sale

August 7–10; 9 a.m. to 5:30 p.m.; Garden Gate Shop

Don't miss this chance to shop a wide selection of discounted items.



photo by Christopher Gibbons

Café Flora

Brunch at Spink Pavilion
Sunday mornings
March through October
www.mobot.org

Don't forget!
Our Café Flora Wine Bar is open on Tuesday evenings during Member Tuesday Nights (Memorial Day–Labor Day)

Eric Carle Sale

July 18–20; 9 a.m. to 4 p.m.; Butterfly House Gift Shop

To celebrate Breakfast with *The Very Hungry Caterpillar* (see page 18), enjoy 10% off all Eric Carle merchandise in the Butterfly House Gift Shop, including books, toys, and more. See gift shop for details.

Bug Hunt Sale

July 19–20; 9 a.m. to 4 p.m.; Butterfly House Gift Shop

Gear up for your own bug hunt (see page 18) at the Butterfly House Gift Shop and save 10% on all insect hunting equipment and supplies such as nets, containers, and more. See gift shop for details.



Around the World Wine Dinner

Travel around the world through a four-course dinner hosted by a wine expert. Third Friday of the month. 6:30 p.m. Reservations required: (314) 577-0200. Learn more at **www.mobot.org/events.**

Garden Gate Shop
4344 Shaw Blvd.
St. Louis, MO 63110
Monday–Sunday
9 a.m. to 5:30 p.m.
(314) 577-5137

Butterfly House Gift Shop
15193 Olive Blvd.
Chesterfield, MO 63017
Tuesday–Sunday
9 a.m. to 4 p.m.
(636) 530-0076 ext. 15

Little Shop Around the Corner
4474 Castleman Ave.
St. Louis, MO 63110
Tuesday–Saturday
10 a.m. to 4 p.m.
(314) 577-0891

Tributes

January–March 2014.
A tribute gift is a wonderful way to honor family and friends. As of January 1, 2014, tributes of $50 or more are listed in the *Bulletin*. For more information about giving opportunities at the Garden, please call (314) 577-5118 or make a tribute gift online at **www.mobot.org/tributes**.

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January 1–March 31, 2014. For more information, call (314) 577-5118 or visit **www.mobot.org/donate**.

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Circle of Light Independent Spiritualist Church
Mr. Michael Noltin

Judith T. Helfrich
Mr. Andrew Helfrich

Rafael Alexander Molina
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Dr. Joseph Walline and Dr. Priscilla Song

Butterfly House

January 1–March 31, 2014. Call (314) 577-5118 or visit **www.butterflyhouse.org/donate** to learn more.

Tributes

In Honor of

Ms. Rachel Anderson
Ms. Jackie Juras

In Memory of

Kathleen McKee Widick
Anonymous

Mr. Michael Muckler
Helen VanDerhyden

Pavers

Allie
Mr. William T. Stanislaw

Bill and Sue Ade
Nancy Ade

Mrs. Kathleen Greenwald
Mr. Doug MacPherson

Mrs. Lesslie Frawley
Ms. Victoria J. Campbell and Butterfly House Staff

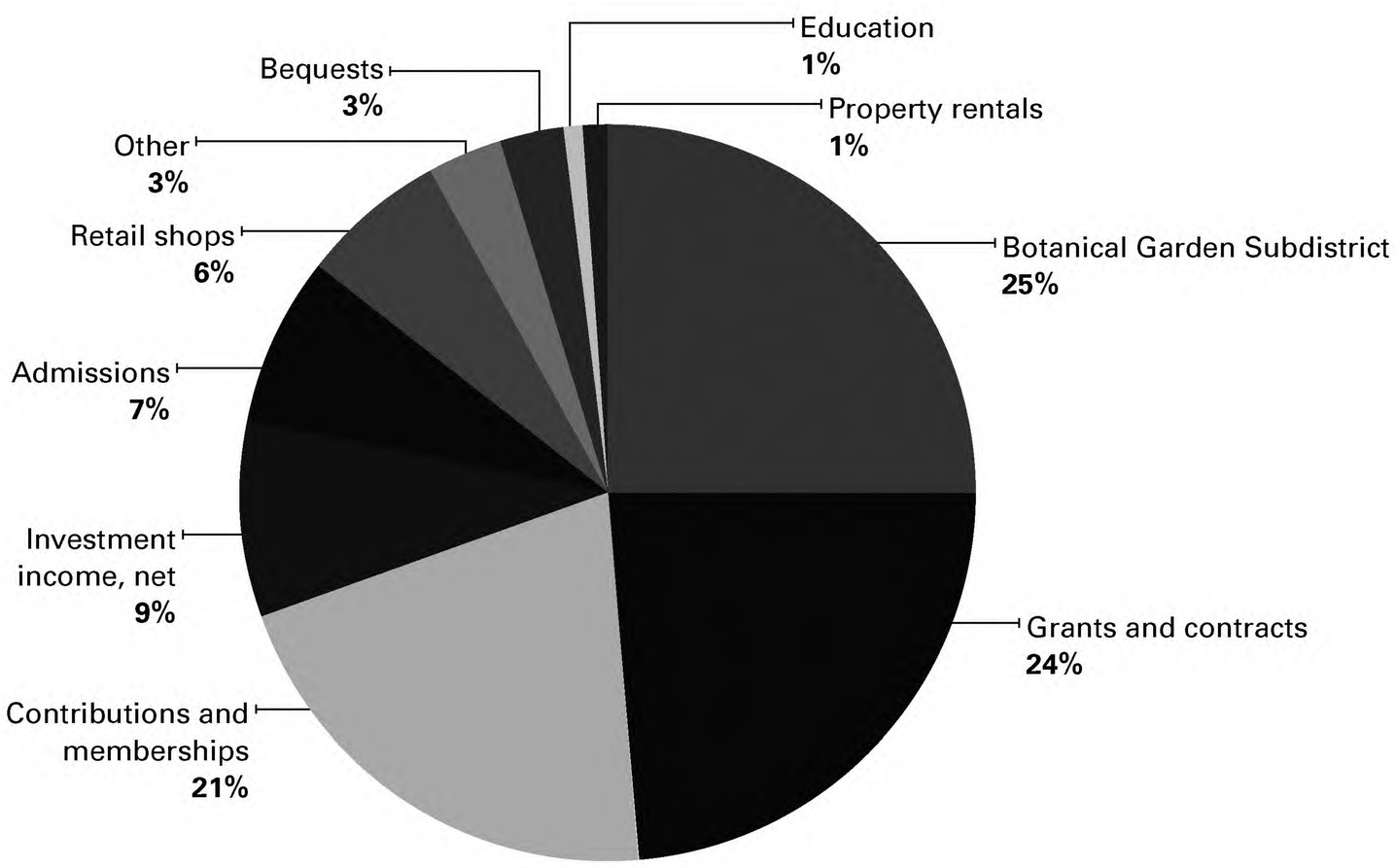
O'Malley
Ms. Joan O'Malley

Mrs. Carroll L. Schmelz
The Schmelz Family

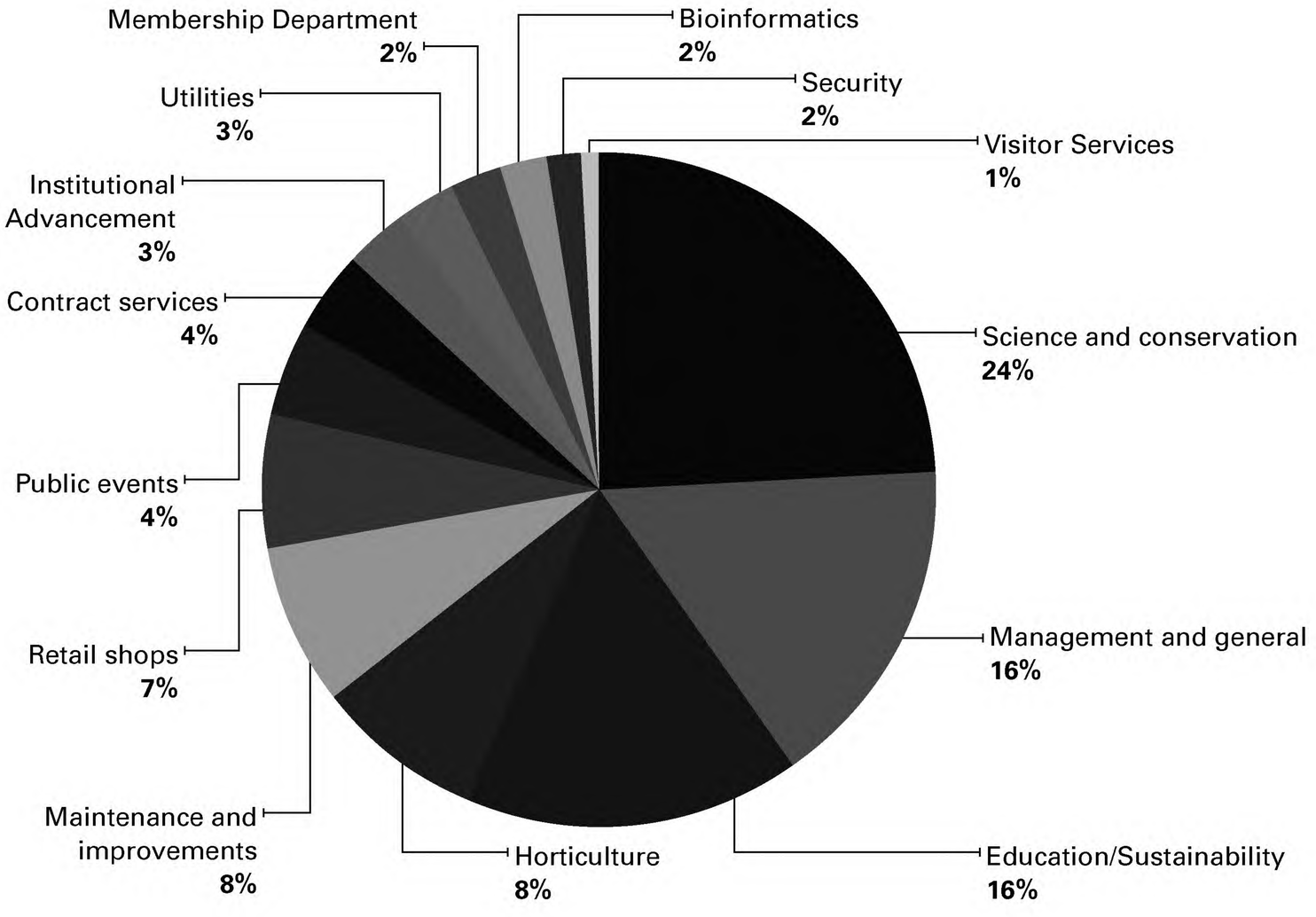
Zoey J. Stark
Mr. and Mr. Scott J. Dreher

Patricia Ann Welch
Ms. Mary A. McFarland

2013 Operating Support and Revenue



2013 Operating Expenses



Revenue and Expenses for the Garden in 2013

Excerpted from the Missouri Botanical Garden's 2013 Annual Report, these charts represent the operating support and revenue as well as operating expenses for the Garden's family of attractions, including the Sophia M. Sachs Butterfly House, Shaw Nature Reserve, and Litzsinger Road Ecology Center. The charts provide an overview of the Garden's sources of support and also illustrate how funding is used to advance our mission and strategic goals.

You will see 21% of our operating support comes from contributions and memberships—that is, you. Your support as a member is essential to our horticultural displays, cultural events, education programs, science and conservation work, and much more. Thank you for contributing to our success.

To learn more about the discoveries, achievements, and finances of the Garden in 2013, please review the Annual Report at **www.mobot.org/reports**.

Heritage Society



All About the Wildflowers: Peg and Blanton Whitmire's Legacy

Visitors to Shaw Nature Reserve love the Whitmire Wildflower Garden. They enjoy the year-round showcase of over 800 Missouri native species and are inspired by the diversity achieved through native landscaping. What they probably don't know is that it began as a birthday present in the 1980s.

Blanton and Peg Whitmire discovered the Missouri Botanical Garden when they moved to St. Louis and became members in 1974. Their neighbor, noted conservationist and naturalist Edgar W. Denison, introduced them to Shaw Nature Reserve (then Shaw Arboretum) after learning of Peg's love of native wildflowers.

For Peg's 70th birthday, Blanton wanted to create one grand display that showcased the diversity of Missouri wildflowers. This undertaking would require vast space and scientific knowledge to properly develop and care for the plants. Knowing how fond Peg was of the Reserve, Blanton met with Director John Behrer to discuss creating a Missouri wildflower display.

The Reserve was very interested in Blanton's idea; they had wanted to create such a display as well. The landscape architecture firm MTR developed a master plan identifying an ideal tract for it, and details for the garden's development began to take shape.

On Peg's birthday, the week before Christmas, she arrived at the Reserve with her family and was greeted by friends and staff. There she was presented with her surprise birthday gift—the plans for the five-acre Whitmire Wildflower Garden.

By the time Peg received her gift, Blanton was deeply engaged with the science, conservation, and education work at the Reserve. He and Peg were frequent visitors and contributors. They continued to support the development of the Whitmire Wildflower Garden and other projects.

The Whitmire Wildflower Garden now hosts classes and programs all year long for a wide range of visitors, from casual gardeners to PhD-level researchers and everyone in between.

"People are just beginning to fully understand the value of native plants," Blanton says. "The garden serves a purpose; it showcases their beauty, diversity, and adaptability. You can go to one place and see many wonderful examples all year long."

This focus on understanding, education, and the native environment echo the Reserve's mission, which is to "inspire responsible stewardship of our environment through education, restoration, and protection of natural habitats, and public enjoyment of the natural world."

"It means a lot to have the Whitmire Wildflower Garden," Blanton says. "Science education is so important. I feel good about what's going on at Shaw [Nature Reserve]; it's a good thing to support."

photo by Patricia Arnold

Leave Your Own Legacy: Join the Heritage Society

Missouri Botanical Garden founder Henry Shaw created a great gift for St. Louis and trusted those who followed would steward his legacy and help it grow. For over 150 years, philanthropic leaders have made legacy gifts to support the Garden. Their generosity has made a difference for our visitors, our community, and our planet.

The Garden established the Heritage Society in 1986 to recognize those who plan to support the Garden beyond their lifetimes. By including the Garden in their estate planning, members of the Heritage Society take deliberate steps to ensure the Garden's future.

To learn more about the joining the Heritage Society, please contact Joyce Pluhar at (314) 577-5199 or **joyce.pluhar@mobot.org** to discuss how your gift can help shape the Garden's future. You can also visit **www.mobot.org/plannedgiving**.

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greener tomorrow

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You can also send an email to **membership@mobot.org** if:

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- ❑ Your address is incorrect
- ❑ You receive more than one copy
- ❑ You no longer wish to receive the *Bulletin*

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P.O. Box 299 • St. Louis, MO 63166–0299

PERIODICALS
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ST. LOUIS, MO

JAPANESE FESTIVAL
Hours and tickets at www.mobot.org
August 30 to September 1

photo by Tom Incrocci

bulletin calendar

June | July | August



Be a Kid Again

Friday, June 20

Enjoy spirits and special cocktails from local distilleries as you explore the Children's Garden. Guests must be 21 years of age. Registration required.

www.mobot.org/beakidagain



Bug Hunt

July 19–20

at the Butterfly House

www.butterflyhouse.org

HAPPY BIRTHDAY, HENRY!

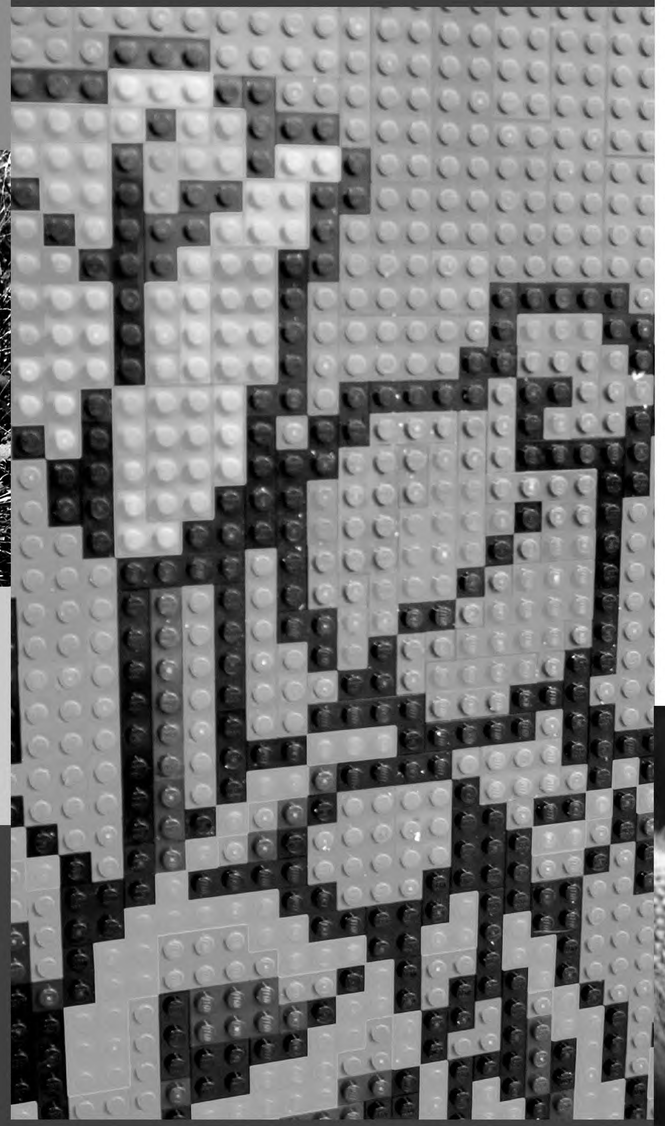
Free admission for all visitors on July 24.



Herbs & Heirlooms Tuesdays

Tuesdays,
May 27–August 26
10 a.m. to noon

Explore a different herb every week, pot an herb to take home, and learn more about ways to care for and use your new plant. Included with Garden admission.



www.mobot.org/events

NATURE CONNECTS

Art with LEGO® Bricks

Now through September 7

Explore larger-than-life plant and animal sculptures as they take up residence at the Garden this summer.

www.mobot.org/natureconnects

With support from Christner Inc.
Additional support from Ameren and Mercy Kids

LEGO® Brick Buildtanical Challenge

Saturday, July 12 | 10 a.m. to 4 p.m.

Upload a photo of your nature-inspired LEGO brick creations to our website, and we'll share it on the Garden's social media pages. The top 10 nature-inspired LEGO brick creations in each category will be on display, and exhibit creator Sean Kenney will choose one winner in each category. For more information, visit **www.mobot.org/buildtanical**.

Nature Connects: Meet the Artist

Saturday, July 12 | 2 p.m.

Meet Sean Kenney, the creator of Nature Connects: Art with LEGO® Bricks. The New York-based artist will discuss his creative process and what it's like to have the coolest job in the world! Included with Garden admission. Seating is limited.

Desert Show:

Plants of Southern Africa and Madagascar
June 28–July 27

Sponsorship provided by the Henry Shaw Cactus and Succulent Society.

www.mobot.org/desertshow



Whitaker Music Festival

Wednesdays, June 5–August 5

Concerts at 7:30 p.m.
Free admission after 5 p.m.

Get the full lineup at

www.mobot.org/whitaker

Funded by WHITAKER FOUNDATION

Illinois Appreciation Week

June 8 through 14

Your Illinois ID is your ticket to 20% off membership during Illinois Appreciation Week! Just show your ID at the Membership Services Desk to qualify for the discount.

Member Tuesday Nights



Memorial Day–Labor Day
5 to 8 p.m.

We love our members, and we want to say thank you! All summer long, the Garden is open for members only on Tuesday evenings. Enjoy the beauty of the Garden and these extra benefits:

- Free Children's Garden admission
- Themed, self-guided tours
- Chess with the Chess Club and Scholastic Center of St. Louis
- Free Desert Show admission
- Free Garden History Series presentations
- Free Science:30 programs
- Nature Connects exhibit open (admission charges apply)
- Café Flora Wine Bar in Spink Pavilion

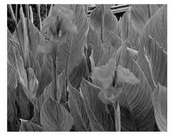
June 2014

average temperature: low 67°, high 85°
average precipitation: 4.3 in.

What's in bloom?


Black-eyed Susan


Bigleaf hydrangea


Canna

6/3	❀ Members-only Tuesday Night
6/5	**World Environment Day**
6/7	Green Homes Festival, 9 a.m. to 4 p.m. KC
6/8	St. Louis Garden Tour 2014 $ ☎
6/8–6/14	Illinois Appreciation Week, 9 a.m. to 5 p.m.
6/10	*Happy Birthday St. Louis!* book signing with author Carolyn Mueller, 11 a.m. GGS
6/10	❀ Members-only Tuesday Night: Science:30, 6:30 p.m. ☎
6/11	Firefly Festival, 8 to 9:30 p.m. $ ☎ BH
6/14	**Flag Day**
6/15	**Father's Day**
6/17	❀ Members-only Tuesday Night
6/18	Dr. Gary Nabhan lecture and book signing, 2 p.m. ST
6/18	Firefly Festival, 8 to 9:30 p.m. $ ☎ BH
6/20	Be a Kid Again, 6 to 8:30 p.m. $ ☎ CHD
6/24	❀ Members-only Tuesday Night
6/25	Firefly Festival, 8 to 9:30 p.m. $ ☎ BH
6/27	❀ Member Event: Desert Show Preview and Members-Only Shopping Hours: Henry Shaw Cactus and Succulent Society Show and Sale, 5 to 8 p.m. RVC
6/28–7/27	Desert Show: Plants of Southern Africa and Madagascar, *through July 27.*
6/28–6/29	Henry Shaw Cactus and Succulent Society Show and Sale, 9 a.m. to 5 p.m. RVC
6/28	Succulent Saturday: Fresh Ideas for Succulent Design and Maintenance with Debra Lee Baldwin, 10 a.m. to 3 p.m. $ ☎ ST and KC
6/28	**Ramadan**

EXTRA 10% OFF

Your purchase in June for our 10th anniversary!

For Garden members only during the month of June. Open Tue.–Sat., 10 a.m. to 4 p.m. See shop for details.

LITTLE SHOP AROUND THE CORNER

July 2014

average temperature: low 71°, high 89°
average precipitation: 4.2 in.

What's in bloom?


Coneflower


Waterlily


Water mimosa

6/28–7/27	Desert Show: Plants of Southern Africa and Madagascar, *through July 27.*
7/1	❀ Members-only Tuesday Night
7/4	**Independence Day**
7/8	❀ Members-only Tuesday Night: Science:30, 6:30 p.m. ☎
7/11	**World Population Day**
7/12	LEGO® Brick Buildtanical Challenge Finals, 10 a.m. to 4 p.m. MH
7/12	Nature Connects: Meet the Artist, 2 p.m. ST
7/15	❀ Members-only Tuesday Night
7/16	Public Symposium on Ecological Restoration, 9 a.m. to 5 p.m. RVC
7/17	❀ Member Event: Family Picnic, 5:30 to 8:30 p.m.
7/18–7/19	Breakfast with *The Very Hungry Caterpillar*, 9 to 10 a.m. $ ☎ BH
7/18–7/20	Eric Carle Sale, 9 a.m. to 4 p.m. BH
7/19–7/20	Bug Hunt, 6:30 to 9 p.m. $ ☎ BH
7/19–7/20	Bug Hunt Sale, 9 a.m. to 4 p.m. BH
7/22	❀ Members-only Tuesday Night
7/22	❀ Members Day: Garden History Series–The Life and Times of Henry Shaw, 6 to 7 p.m. ☎ ST
7/24	Henry Shaw's Birthday, 9 a.m. to 5 p.m.
7/29	❀ Members-only Tuesday Night
7/29	❀ Members Day: Garden History Series–Historic Building Walking Tour, 5 p.m.
7/29	**Eid Al-Fitr**



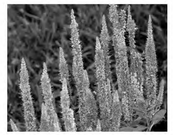
August 2014

average temperature: low 70°, high 88°
average precipitation: 3.4 in.

What's in bloom?


Zinnia


Scarlet runner beans


Spiked speedwell

8/2	Missouri Botanical Garden Daylily Association Sale, 9 a.m. to 5 p.m. RVC
8/5	❀ Members-only Tuesday Night
8/7–8/10	Sidewalk Sale, *through August 10.* GGS
8/9–8/10	Greater St. Louis Iris Society Show and Sale, 9 a.m. to 5 p.m. RVC
8/12	❀ Members-only Tuesday Night: Science:30, 6:30 p.m. ☎
8/17	Flower Power Fun Run, 7 to 9 a.m. $ ☎
8/19	❀ Members-only Tuesday Night
8/26	❀ Members-only Tuesday Night
8/30–9/1	Japanese Festival $ August 30: 10 a.m. to 8 p.m. August 31: 10 a.m. to 8 p.m. September 1 (Labor Day): 10 a.m. to 5 p.m.



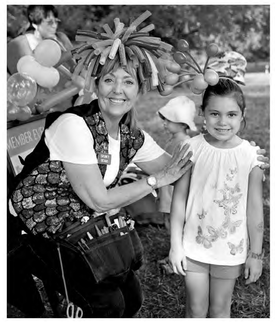


Don't forget!



Green Homes Festival

Saturday, June 7;
9 a.m. to 4 p.m.
Celebrate sustainable living with the whole family in this festival of learning, playing, and engaging with local sustainability experts. Check out more than 70 green exhibitors! Included with Garden admission.



Members Event: Family Picnic

Thursday, July 17; 5:30 to 8:30 p.m.
Enjoy music, entertainment, face painters, crafts, balloon artists, and a chance to play in the Children's Garden after hours! Free for members. Call (314) 577-5118 or visit **www.mobot.org/memberevents.**



Plant Societies Shows and Sales

Get the latest information about your favorite plant society's show and sale by visiting **www.mobot.org/plantsocieties.**

KEY (All events take place at the Garden unless otherwise noted.)

BH	Butterfly House	KC	Kemper Center for Home Gardening
BHGS	Butterfly House Gift Shop	LS	Little Shop Around The Corner
CA	Cohen Amphitheater	MC	Monsanto Center
CBEC	Commerce Bank Center for Science Education	MH	Monsanto Hall (in RVC)
CHD	Children's Garden	RVC	Ridgway Visitor Center
CL	Climatron lawn	SNR	Shaw Nature Reserve
GGS	Garden Gate Shop	SP	Spink Pavilion
JE	Jordan Education Wing (in RVC)	ST	Shoenberg Theater (in RVC)

Sassafras
❀ Members-only event
20% Member discount at the shops
☎ Reservations required
$ Fee required

photos by (front) Leslie Patrice, Kaitlyn Mauro, Rebecca Hensiek, Tom Incrocci, and Lindsay Moser. (this page) Rebecca Hensiek, Tom Incrocci, Molly Krohe, Micah Usher, and Leslie Patrice.

Missouri Botanical Garden

bulletin

Fall 2014 Vol. 102, No. 4 www.mobot.org



photo by Koraley Northen

President's Comment

Approximately one quarter of the world's plant species are currently threatened with extinction as a result of environmental transformations. In some areas the threat to plant life is even greater. On the island of Mauritius, where I traveled early this summer, 89% of endemic plants are threatened, with some species represented by just a handful of individual plants remaining in the wild.

As Dr. Rainer Bussmann of the Garden's William L. Brown Center points out, climate change is the most complex and important environmental problem of our time (see page 12). Accordingly, the impact of climate change on plants—and what we can do to predict and address that impact—is a focus that spans the entire Garden organization. From monitoring climate patterns here on Garden grounds (see page 9) to appreciating and enriching the biodiversity of the St. Louis region (see page 14) and beyond, it is Garden's mission to understand the ways in which contemporary climate affects plants, predict the responses of plants to future changes, and implement conservation plans to help vulnerable species and their habitats adapt to these evolving conditions.

We hope you find this look at the Garden's climate-oriented research and conservation work enlightening, and that you'll discover ways in which you can help these efforts—from making a donation to fund our research to volunteering at one of our family of attractions. It is thanks to our members and volunteers that so much of our work is possible (see page 4), and it is thanks to your support that the Garden continues to be an international leader in conservation, ecological restoration, and biodiversity preservation.

Peter Wyse Jackson

Dr. Peter Wyse Jackson,
President

As a Garden member, did you know:

- You receive reduced pricing for special events?
- You can enjoy evening walking hours on Tuesdays in the summer?
- You receive free admission for two adults and all children ages 12 and under to the Shaw Nature Reserve and Sophia M. Sachs Butterfly House?
- You receive free admission to the Children's Garden all day Tuesdays? (Open April–October)
- Special Member Days include exclusive events and activities, free tram rides, and discounts in the gift shops and café?
- You enjoy free or reduced-price admission to nearly 270 botanical gardens and arboreta in the U.S. and Canada?

These are only a few of your benefits. Visit **www.mobot.org/membership**, email **membership@mobot.org**, or call (314) 577-5118 to learn more.

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Hillary B. Zimmerman

Non-voting advisory members:
Ms. Janice M. Nelson
Mr. James H. Yemm

Garden Hours

The Garden is open 9 a.m. to 5 p.m. seven days a week except during holiday hours (November–January). Closed on Christmas Day. The Garden stays open on Wednesday evenings from 5 to 8 p.m. from Memorial Day through Labor Day. Visit **www.mobot.org** for more information.

General public outdoor walking hours begin at 7 a.m. Wednesdays and Saturdays.

General Admission

$8 ($4 for residents of St. Louis City and County); children 12 and under are free. Garden members receive free admission (based on level).

Children's Garden: $5 for children; adults admitted free. ($3 for Garden member children.) Member children admitted free on Tuesdays. Open April through October.

Contact

Missouri Botanical Garden
4344 Shaw Blvd., St. Louis, MO 63110
(314) 577-5100 • www.mobot.org

On the Cover

The morning sun brings out the best fall colors in the Japanese Garden, *Seiwa-en*.
Photo by Christopher Gibbons.

Credits

Editors: John Dedeke, Andrea Androuais
Designers: Katie Schaefer, Andrea Androuais
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Sustainability

The Missouri Botanical Garden *Bulletin* is printed on paper containing 100% post-consumer recycled content, that is, paper that you might have placed in the recycle bin in your home or office this year. It is manufactured using biogas, a renewable energy source. We print locally, so there is no long-haul transportation, and we're reinvesting in our community. We work hard to choose the most environmentally responsible paper around. So if you aren't quite ready to go completely electronic with our online version, you can still enjoy your paper *Bulletin* in good conscience. Once you've read it, please recycle.

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photo by Kent Burgess

To discover and share knowledge about plants and their environment in order to preserve and enrich life.

– mission of the Missouri Botanical Garden

News

Garden Attendance Soars

This July, the surprisingly cool weather and a variety of exciting events brought more than 150,000 visitors to the Garden and its family of attractions—29% more than the same month last year. The Doris I. Schnuck Children's Garden also experienced one of its busiest summers with a 77% increase in attendance over July 2013. And this year's Whitaker Music Festival was a record-breaking event. More than 69,676 visitors enjoyed the popular music concerts, including 10,562 on July 2 for Old Salt Union.

And there's still more to come! Visit **www.mobot.org/events** for a list of events all year long, and remember to check out the member-only events at **www.mobot.org/memberevents.**

105th Birthday at the Garden

A Garden supporter for more than seven decades, Gertrude Scheible celebrated a milestone 105th birthday during a special party at the Garden's Spink Gallery on Sunday, June 8, where she was joined by her caregiver and close friends and family members. She says that the Garden and her church are her two favorite places to spend her time. Happy birthday, Gertrude!



photo by Flannery Allison





20 years— John Muller, Nancy Wallace, Nancy Bell, Dr. Peter Wyse Jackson, Lois Schoech, Marion Werner, Carole Vohshen, Dick Russell; not pictured: Ruth Clark. 10 years–front row, from left: Irene Goldman, Nancy Willard, Joan Radcliffe, Laverne Thurmond, Marion Briesacher; second row, from left: Barb Eiler, Pat Kohler, Anne Bond, Francine Boillat, Paula French, Leslie Clark, Dr. Peter Wyse Jackson, Nichole Blume, Toni Hayes, Sue Rogers, Rosemary Spitler, Mary Hammer; third row, from left: Gary Hartmann, Mike Lerch, Maya Lerch, Dave Riley, Paul Feldker, Ann Tobben, Vaugh Meister. Not pictured: Lee Ann Alexander, Barbara Altenbernd, Marilyn Claggett, Mary Grossman, Ruth Hartsell, Don Hays, Joyce Hillebrand, Armella Jenkins, Paula Lampen, Virginia Lay, Judith Maune, Marti Moore, Sharon Pedersen, Kim Pope, Stephanie Prade, Sandra Raney, Marian Wuest. (photos by Flannery Allison)

Volunteer Service Recognition

The Missouri Botanical Garden would not be the world-renowned institution it is today without its dedicated volunteers. In 2013, more than 1,900 people volunteered more than 145,000 hours of service at the Garden—the equivalent of 75 full-time staff. The Garden celebrated this remarkable service during the Volunteer Appreciation Evening on May 12 and the Volunteer Service Luncheon on May 28. To learn more about volunteering, please visit **www.mobot.org/volunteer.**

In Memoriam: Walter Stern

Walter Stern, a longtime Garden supporter and civic leader, passed away on July 20. Walter founded W.G. Stern & Co. Insurance in 1964 and was the company's president for 50 years. He was serving as the President of the Ladue City Council at the time of his death.

Walter served for many years as a commissioner of the Botanical Garden Subdistrict of the Metropolitan Zoological Park and Museum District. The district provides financial support for five cultural institutions in St. Louis, including the Garden.

Walter and his wife Nora have been friends of the Garden since the 1960s. The Garden has been fortunate to have the benefit of Walter's financial savvy, business acumen, and wonderful support for so many years. He will be missed.

Two Titan Arum Plants Bloom (Again!)

The Garden once again witnessed the rare blooming of two titan arums (*Amorphophallus titanum*) this summer, the fourth and fifth such occurrences to take place on Garden grounds in just over two years. "Izzy" unfurled on June 30 with an inflorescence 63 inches high, just shy of the 65-inch height reached by the titan plant that bloomed at the Garden last October. "Hunter" bloomed on July 28 and was 59.5 inches tall.

LANTERN FESTIVAL

magic reimagined

SUMMER 2015



Celebrating the Garden's ongoing work in cataloging and preserving the flora of China, *Lantern Festival: Magic Reimagined* will bring the artistry and excitement of the 2012 Lantern Festival back to the Garden next summer with 22 all-new lantern installations crafted with silk and steel.

"We were overwhelmed with the reaction our 2012 Lantern Festival received and for the last two years have heard from so many people asking if another festival would ever be held," says Garden President Dr. Peter Wyse Jackson.

A fiery phoenix, an expansive dragon horse, playful pandas, and a cherry blossom arch (pictured) are among the subjects that will light up this new lantern exhibit from Memorial Day weekend through August 22, 2015. Tickets will be available November 1, 2014. For more information, visit **www.mobot.org/lanternfestival**.

To get involved as a sponsor, please contact Kate Brueggemann, Director of Development, by phone at (314) 577–5120 or by email at **kate.brueggemann@mobot.org**.

News cont.

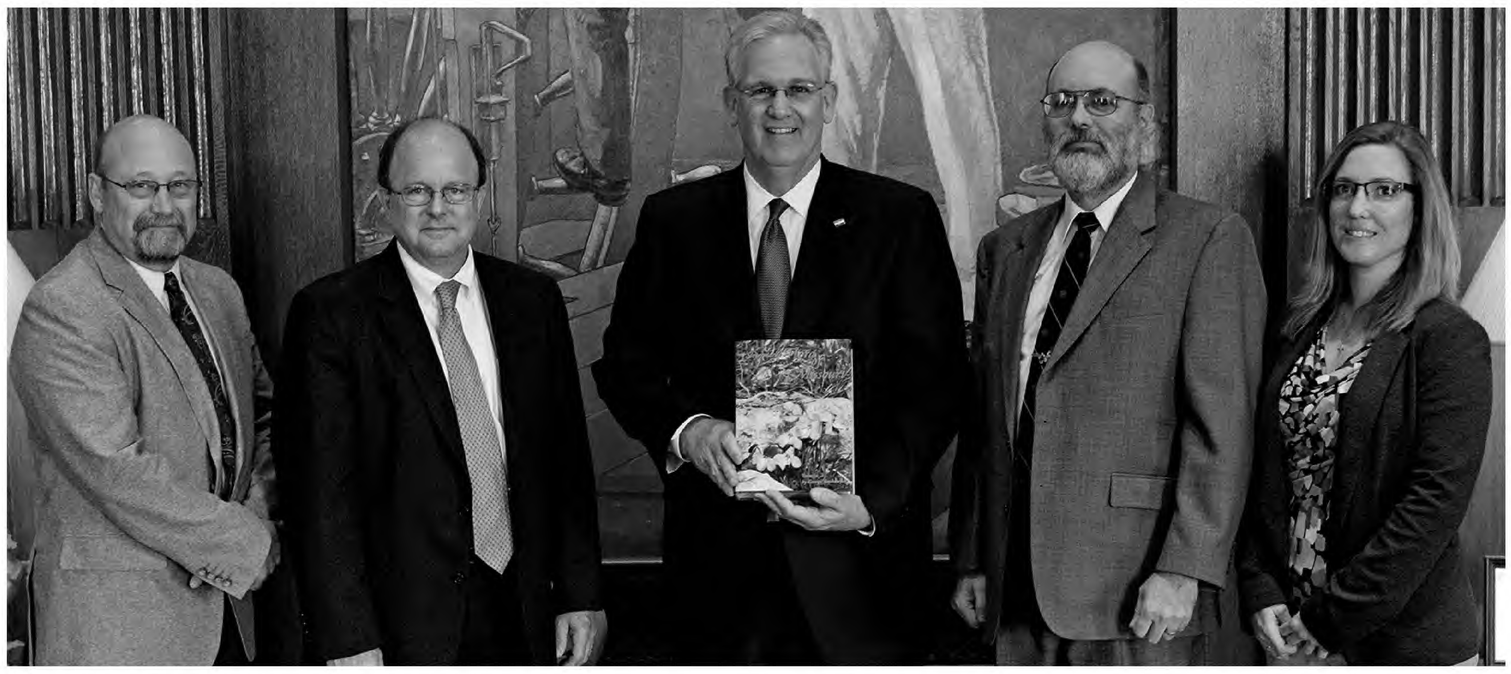
"We have five tubers from the same seed batch," says Emily Colletti, curator of the Garden's aroid collection. The blooming of "Izzy" in particular is surprising, given that it last flowered just two summers ago in 2012.

Cooler growing conditions and greater exposure to light may be facilitating more regular bloom cycles for the corpse flowers, says Andrew Wyatt, Vice President of Horticulture and Living Collections. Learn more at **www.mobot.org/titanarum.**

Welcome New Young Friends Council Members

The Young Friends Council is one of four leadership boards supporting the Garden, and it is committed to introducing the Garden to a younger demographic and raising funds for the Doris I. Schnuck Children's Garden through 2018. This summer, it welcomed the following new officers and members:

Brad Landsbaum, *Chair*
Commerce Bank
Cindy Hultz, *Co-chair*
Edward Jones
Lucy Adams
CDG Engineers
Erika Sevigny
SteadyRain
Dottie Hemba
Longwood Gardens
Jennifer Mullikin
SCI Engineering
Kati Johnson
Scottrade, Inc.
Lindsey Carlie
Bunge North America, Inc
Paul Cowherd
Great Southern Bank



(from left) Tim Ripperger (MDC), Dr. Miller, Governor Nixon, Dr. Yatskievych, and Malissa Underwood (MDC). (photo courtesy of Office of Governor Nixon)

Special Honors

Along with representatives from the Missouri Department of Conservation (MDC), Senior Vice President of Science and Conservation, Dr. James Miller and Garden curator and author Dr. George Yatskievych presented Missouri Governor Jay Nixon two copies—one for the Missouri archives and one for his personal library—of *Flora of Missouri* on April 28 during a proclamation ceremony in Jefferson City.

At a special ceremony in June, the National Arboretum awarded the Medal of Excellence to Dr. Peter Raven, President Emeritus at the Garden, recognizing his efforts to promote gardens and ornamental horticulture as a way to interest the public in conservation and supporting sustainable environments.

Also in June, the Missouri Chapter of the U.S. Green Building Council honored Deb Frank, the Garden's Senior Vice President of Sustainability, with a Community Champion Award at its 2014 Growing Green Awards ceremony. The recognition celebrates her career-long work in support of sustainable building efforts in the state.

Best of Missouri Market & more

Shop, eat, hear live music, and more! Enjoy breakfast and a members-only shopping hour on Saturday and Sunday. Join or renew your membership at the event and get in free! More at **www.mobot.org.**



photos by Kevin Kersting, Brian Mueller, and Tom Incrocci

Work on World Flora Online Moving Forward

In June, representatives from the Missouri Botanical Garden joined 25 attendees from 10 international botanical institutions at the Komarov Botanical Institute in St. Petersburg, Russia, to continue work on the World Flora Online (WFO) project, made possible by a generous contribution from Monsanto Company.

Dr. James Miller, Senior Vice President of Science and Conservation, says agreement was reached on how some key priorities in information technology can be managed alongside the challenging botanical research necessary. The meeting was chaired by Garden President Dr. Peter Wyse Jackson, who was re-elected as Chairman of the WFO Council. The Garden's Chief Information Officer, Chuck Miller, was re-elected Chairman of the Technical Working Group.

The meeting followed a conference celebrating the institute's 300th anniversary, created by Peter the Great in 1714. Dr. Wyse Jackson was a keynote speaker and presented a proclamation of congratulations on behalf of the Garden.



Representatives from botanical institutions gathered at the World Flora Online Consortium meeting in St. Petersburg, Russia. (photo courtesy of The New York Botanical Garden)





News cont.

Garden President Debuts Book on Irish Flora

Garden President Dr. Peter Wyse Jackson recently published his book *Ireland's Generous Nature: The Past and Present Uses of Wild Plants in Ireland*. The 700-page book is the first-ever comprehensive account of the historical and present-day uses of wild plant species in Ireland. It includes scientific facts as well as Irish myths, tales, and superstitions that offer an unrivalled account of the country's plants.

The book is available for sale at the Garden Gate Shop.

How To: Build a Butterfly Garden

By Kat Golden, Garden Instructor



A butterfly garden is a great way to add a little biodiversity to your backyard, and the requirements are very basic. Learn more about butterfly gardens by visiting **www.mobot.org/plantingthefuture.**

PLANTING the future

Select a location in full sun

Plants, especially flowering plants, need sun to make food for themselves and nectar for butterflies.

Plant butterfly-attracting flowers

Butterflies are attracted to flowers with strong scents and bright colors. Select nectar-producing plants that are native to your area (see a full list of ideal plants for St. Louis-area butterfly gardens at **www.mobot.org/plantingthefuture**).

Include host plants in your garden

Butterflies lay their eggs on host plants that the emerging caterpillars can then eat.

Avoid using chemical pesticides

Pesticides kill butterflies, caterpillars, and other useful insects. For pest control, try planting marigolds, petunias, or herbs that naturally repel pests, or wash pests away with insecticidal soap.

Sit back and enjoy the butterflies!

Learn more about butterfly gardening and see a full list of common butterfly-attracting plants at **www.mobot.org/plantingthefuture.**

Gardening Q&A



Do I need to water my evergreens as often in the fall/winter as in the hot summer?

Failure to properly water evergreens going into winter months was a major factor contributing to evergreen damage resulting from last year's harsh winter in the St. Louis area.

If the temperature of the air dips to 5ºF and your garden's soil is dry, the temperature of the soil and the plant roots in it will also dip to 5ºF. If your garden soil and plant roots are well watered before a bitter freeze, the soil and plant's roots will freeze at the freezing point of water: 32ºF. For this reason, watering your plants prior to bitter freezes will "insulate" plant roots and protect them from serious damage. The plants will also be well hydrated and less prone to desication (winter burn).

This procedure will not always be possible in St. Louis during winter months, but any time you can water broadleaf evergreens before a deep freeze, do so thoroughly and deeply.

Learn more about growing evergreens in St. Louis with our gardening advice, tips, and resources available at **www.mobot.org/gardeninghelp**.

the MODERN gardener's almanac

Horticulturists monitor small changes in weather and climate that could make a big difference for the future of the Garden.

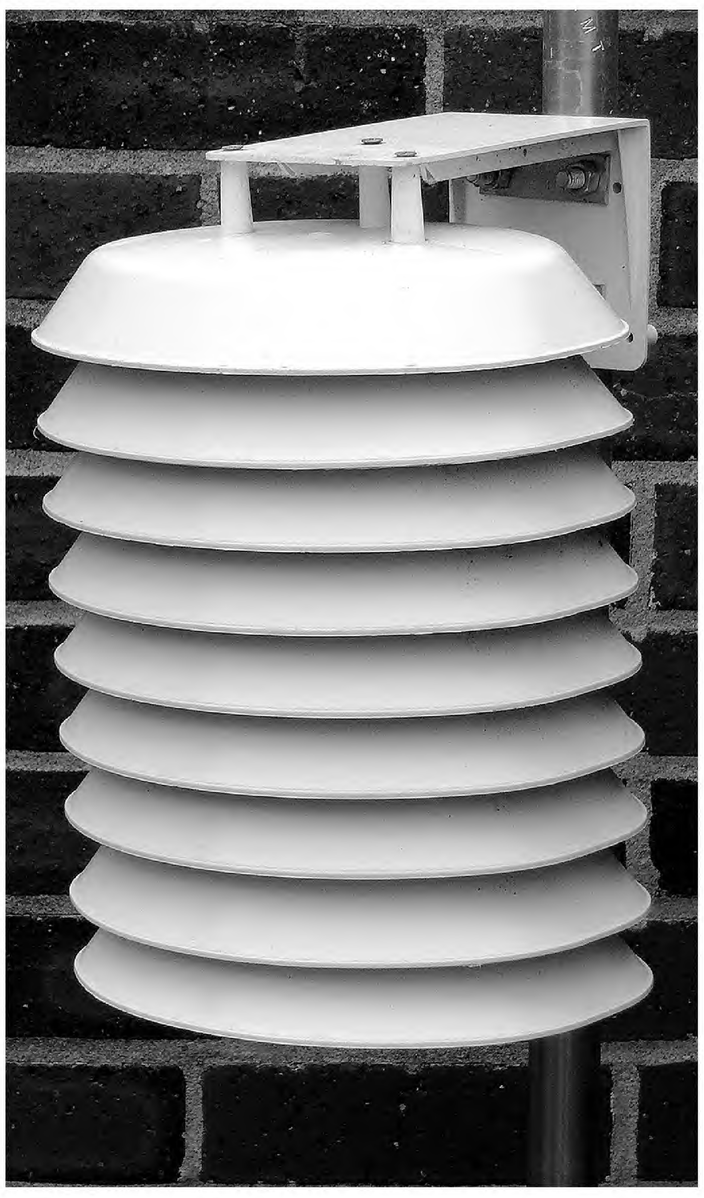


photo by Dan Brown

Each year, Garden staff and visitors alike eagerly anticipate the annual flowering of their favorite plant collections, from the vibrant tulips of spring to the elegant lotus that unfurl each summer to the camellias that brighten winter days. While no two seasons are exactly alike, patterns in weather conditions give the Garden's Horticulture team essential information for anticipating which plant species will thrive in the Garden's display beds and when they'll look their best.

For decades, the average annual extreme minimum temperature data placed St. Louis within Zone 6 on the United States Department of Agriculture's Plant Hardiness Zone Map (**www.usda.gov**), the standard by which gardeners estimate a plant's viability in a particular region. With recent changes in average annual temperature, however, the Garden's environment now trends closer to Zone 7, a change that could have a significant impact on how the Garden manages its living collections and how you look after your own home garden.





(above) Visitors can see the weather station in the Kemper Center's climate garden. (photo by Flannery Allison)

(right) Data loggers are located throughout the Garden, and the data collected by the i-button sensors inside them, along with the RAWS, will help optimize plantings according to climate variations.

A CHANGING GARDEN

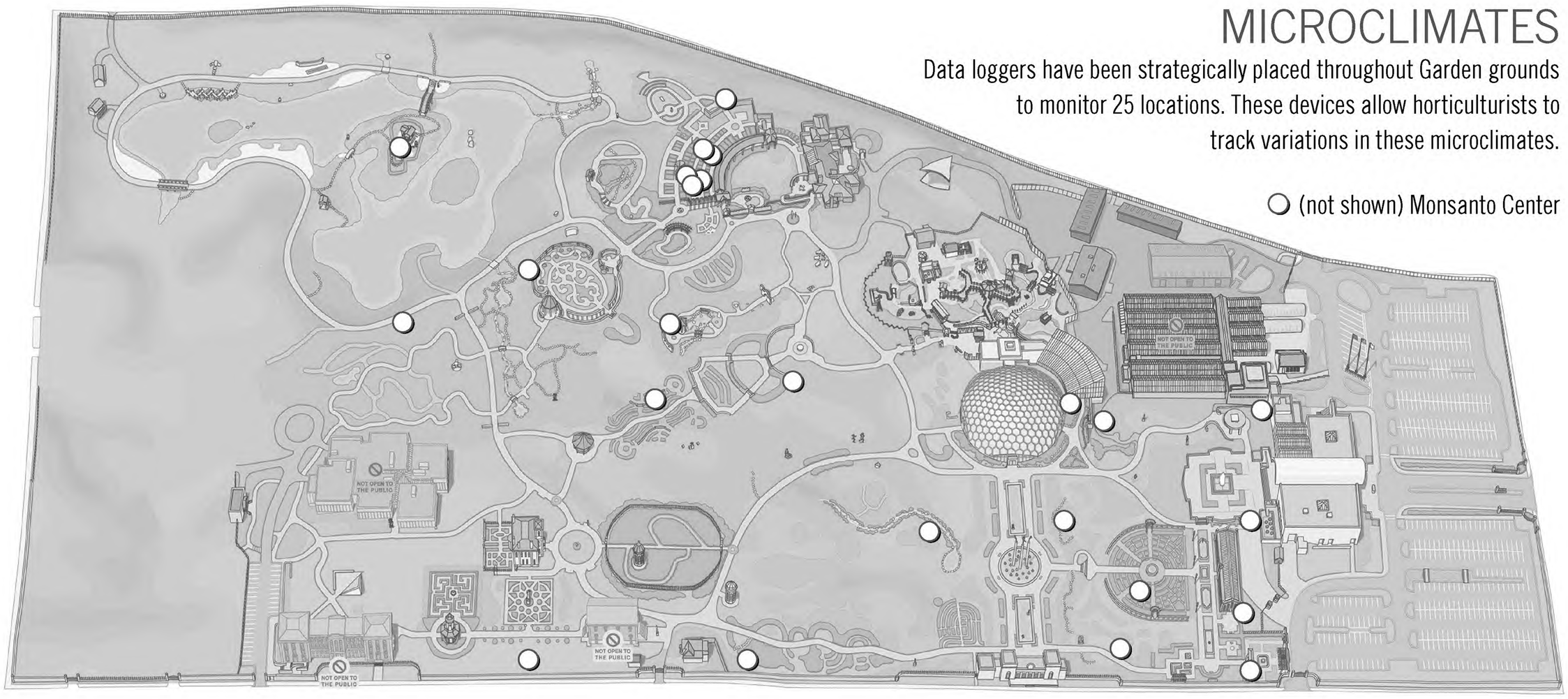
"We are seeing an increase in overall temperature," says Andrew Wyatt, Vice President of Horticulture and Living Collections at the Garden. "However with climate change comes more unpredictably, which generates fluctuations that are harder to predict, posing significant horticultural challenges." With previous experience studying the effects of climate change on plant life at Santa Barbara Botanic Garden in California, Wyatt recognized the need for site-specific weather data and microclimate monitoring to accurately assess how changing climate conditions could affect the ability to grow certain plant species at the Garden.

Funded by a generous private donation, Wyatt and Senior Manager of Horticulture, Jim Cocos, installed a Remote Automated Weather Station (RAWS) at the William T. Kemper Center for Home Gardening in the summer of 2012. "We call it the lunar lander," says Cocos, referring to the spacecraft-like frame of the station. Primarily solar-powered, the station continuously collects and transmits real-time readings of temperature, humidity, precipitation, soil moisture level, solar radiation, photosynthetically active light levels, and wind speed and direction. You can view the latest data collected by the station at **www.mobot.org/weather**.

The Garden is not the only site benefiting from the data collected at the Kemper Center. Humidity and moisture levels recorded at the Garden are used by the Missouri Department of Conservation to help gauge the threat of forest fires in surrounding areas, and according to Cocos, data transmitted from the Garden's station is tracked by weather services all over the country.



The penny-sized i-buttons inside the data logger record information that can be easily downloaded and indexed.



MICROCLIMATES

Data loggers have been strategically placed throughout Garden grounds to monitor 25 locations. These devices allow horticulturists to track variations in these microclimates.

○ (not shown) Monsanto Center

SO CLOSE, YET SO DIFFERENT

The Kemper Center provides an ideal location for the wide array of data collected by the RAWS unit, but significant variations in climate patterns can exist within areas even just a few square feet apart. Such atmospheric zones—close in proximity but distinct in climate—are known as microclimates, and accurately gauging the differences between them across the 79-acre Garden requires even more geographically precise data than the information collected by the RAWS.

In tackling this challenge, the Horticulture team took inspiration from the work of Dr. Matthew Albrecht at the Garden's Center for Conservation and Sustainable Development. For the last several years, Dr. Albrecht's field work has included the tracking of temperature using small, nickel-sized sensors called i-buttons. These small sensors record and store temperature data than can be downloaded and indexed for studying long-term, isolated changes. Horticulturists tend to develop an instinct for sensing variations in temperature, but the i-buttons allow them to put a number on those differences.

"Immediately we began to see five-degree differences between locations," Wyatt says. "Which may not sound like much, but has a huge impact on the ability to grow certain species."

From an initial deployment of 10 i-buttons, the Garden's temperature-tracking arsenal has expanded over the last year and now monitors climate conditions in 25 locations across Garden grounds (see map).

PLANTING THE FUTURE

Once the data collected by the i-button sensors is downloaded, Living Collections Manager Rebecca Sucher and her team can use it to pinpoint the temperature of locations down to a specific date and time, or gauge how hot or cold each location gets over the course of a day, month, or an entire season. For Sucher and Cocos, however, the real strength of the data is in what it can reveal when tracked over time and combined with records from the Living Collections Management database. Horticulturists use this database to monitor the placement and performance of every individual plant in the Garden.

"We know we're not going to see huge differences right away," says Cocos, "but with weather and climate, it's the long-term trends that really tell you something. By recording and analyzing this data over time, we can see how things are actually changing and compare that information with our plant records to see if there's a connection."

Identifying these connections will not only help the horticulture staff address changes in the performance of existing plant collections, but will also enable them to anticipate how well new plant species may thrive if introduced to the Garden.

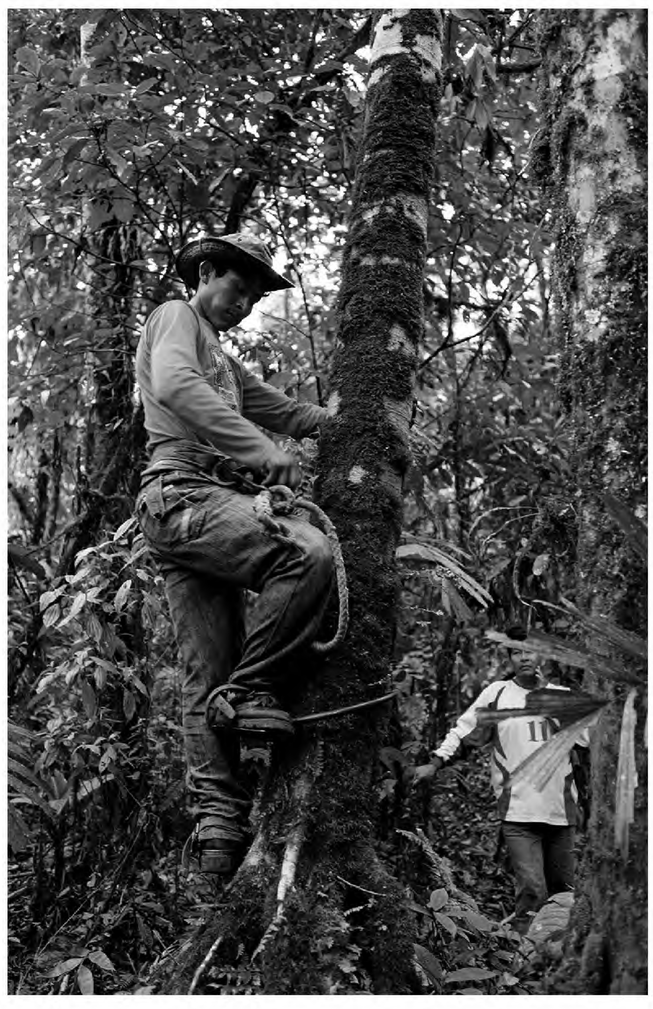
You can help! Support climate research at the Garden. Learn more at **www.mobot.org/climatechange**.

the climate SHIFT

The Garden's Work Researching, Understanding, and Addressing the Plant World's Biggest Threat

Few concepts carry as much botanical influence as climate change. Nowhere in the world are the effects unnoticed. Residents in Africa or South America may cite deforestation for disrupting agricultural traditions, while the tribal communities of Nepal may point to the receding snow line as a sign of the gods' displeasure, but regardless of how these changes are interpreted, they are everywhere.

Accordingly, the study of changing conditions and the search for ways to address them inform all of the Garden's global research efforts. From the Amazon basin to the peaks of the Himalayas, from the shores of Massachusetts to the forests of Madagascar, Garden researchers work to understand and predict how plants will respond to the impacts of a changing environment.



The Madidi Project team has established an unparalleled network of research plots in the Andes rainforest to study how the flora of the region evolves over time. (photo by Jonathan A. Myers)

A COMPLEX CHALLENGE

While there is little dispute among plant scientists that climate conditions are changing around the world, these changes, and the ways in which they are affecting plant life, differ greatly between ecosystems and require equally disparate research strategies.

In the tropical Andes of Bolivia, home to some of the richest biodiversity on the planet, researchers have spent more than 12 years measuring, mapping, and identifying more than 210,000 trees to determine how species react to changing conditions over time. Only after the trees' long-term behavior is understood, says program director and Garden curator Dr. Peter Jørgensen, can efforts to save them from potential harm from the changing environment be successful.

In Central Tennessee and the Ozarks, researchers from the Garden's Center for Conservation and Sustainable Development are examining the vulnerability to climate change of more than 100 rare and endangered plant species. They have also developed tools and methods to predict the migratory routes of plants reacting to climate change, which will help assist some species in their migration in order to preserve biodiversity (see sidebar).

At mountain sites in the Eastern Himalayan regions of Nepal, Bhutan, and China, and at coastal sites in the northeastern United States, researchers from the Garden's William L. Brown Center track the effects of climate change on ethnobotanical traditions and the ways that these systems can help indigenous people adapt to and mitigate climate change.

The goals of these different approaches remain consistent with those of all climate-oriented research undertaken by the Garden: observe and report so that people everywhere can benefit from a greater understanding of how climate change can and will impact their lives.

PLANTS AND PEOPLE

"Changing climate conditions are the single most important factor influencing plant usage today," says William L. Brown Center Director Dr. Rainer Bussmann. Whether for medicine or food, people everywhere rely on the benefits and by-products of plant life, and when the conditions in which these species grow are altered, so are the plants' availability and effectiveness.

The survival of both plants and people under such circumstances depends on adaptation, an important component of the Garden's climate-oriented studies. Traditional knowledge is dynamic, explains ethnobotanist Robbie Hart. Observing the long-term effects of climate change, he says, can help ethnobotanists better anticipate how traditional growing conditions will be affected, and inform adaptation strategies for the future. For example, the Tibetans are now growing grapes and producing ice wine, neither of which were possible just five years ago. With central Bhutan now notably warmer than it was seven years ago, the Bhutanese now help sustain themselves by growing rice.

THE MOST IMPORTANT PROBLEM OF OUR TIME

Climate change is the most complex and important problem of our time, says Dr. Bussmann. Fortunately it is one the Garden and its worldwide research staff are dedicated to addressing.

Learn more! See how the Garden's work is helping communities around the world who depend on plants by visiting **www.mobot.org/climatechange**.

Garden-Hopping

Over long periods of time, plants are capable of adapting to changing climate conditions by dispersing seeds that seek out more favorable conditions. However, with climate change expected to outpace this capability, scientists feel plant populations may need to hitch a ride in order to ensure survival.

This assisted migration—transplanting plant species from one natural place to another—is controversial due to the risk of introducing a species that could become invasive or spread disease. To address these concerns, Garden researchers at the Center for Conservation and Sustainable Development have proposed a program that would chaperone these migrations using botanical gardens as stepping stones in assisting species' dispersal to newly favorable climates. As Garden researcher Adam Smith explains, under this program, botanical gardens could provide necessary care for migrating species and regularly screen them for invasiveness and pests.

Learn more about the program at **www.mobot.org/climatechange**.



In the Himalayas and Tibetan Plateau, climate change is a phenomenon that goes beyond science. For the people there, changes in the weather represent moral and religious issues, and in Tibet, changes are dramatic. (photo by Dr. Anthony Amend)

Butterfly House



Although it is not the only factor, a reduction in milkweed has contributed to the dramatic decline in the monarch population. (photo by JJ Mueller)

Make Way for Monarchs

Making St. Louis a migration hotspot

Monarchs (*Danaus plexippus*) are among the most iconic butterflies in North America. Until recently, the monarch was also one of the most abundant butterfly species in the United States. Longtime Midwest residents may recall the fall monarch migration, in which thousands of butterflies passed through the region on their journey south to Mexico for the winter. Over the last two decades, however, the annual monarch population has declined by 90%. According to Tad Yankoski, entomologist at the Sophia M. Sachs Butterfly House, this is due in large part to a reduction in monarchs' host plant, milkweed (*Asclepias*).

Each spring, monarch caterpillars feed on fresh milkweed as they migrate north, increasing in number until the final generation of the year begins the journey south for the winter. Without milkweed plants along the way for the caterpillars, the monarchs cannot reproduce enough to sustain the population through the fall migration.

Though this is not the only factor causing the decline, it is one you can help address by planting milkweed and other monarch-friendly flowers. Learn how to build a butterfly garden on page 8.

To help bolster this effort, the Butterfly House has distributed more than 300,000 free milkweed seeds to visitors this year—enough to feed more than a half-million caterpillars in a season. You can also pick up free milkweed plants at Shaw Nature Reserve's Shaw Wildflower Market on September 5.



photo courtesy of City of St. Louis

Milkweeds for Monarchs

Together with the Missouri Department of Conservation, the Garden, and the Saint Louis Zoo, the City of St. Louis will plant 50 new monarch gardens through the "Milkweeds for Monarchs: The St. Louis Butterfly Project." Mayor Slay also challenged residents to plant 200 more in 2014 for a total of 250 to commemorate the 250th anniversary of the City's founding. Learn more about how to register your garden at **www.biodiversecitystl.org.**



Owls and Orchids

October 1–31

Don't miss more than 1,000 owl butterflies in the conservatory and Animal Encounters on Tuesday evenings. Learn more at www.butterflyhouse.org/owls.

Shaw Nature Reserve

Climate and Blooms

By Dr. Peter Hoch, Garden Curator and Director of Graduate Studies

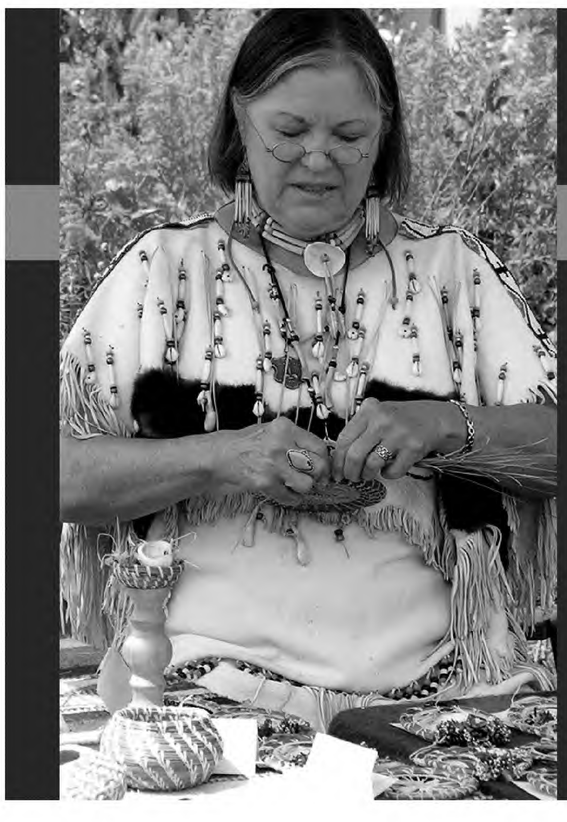
As part of his work at Shaw Nature Reserve, former Garden Director Edgar Anderson instituted a weekly flowering survey every Sunday during the flowering season from late 1937 to mid-June 1942. Realizing his notes' potential value, our research team carried out weekly flowering surveys from 2009 through 2012 that matched those he made as closely as possible.

Comparative analysis of the phenology data between the two datasets is still preliminary, but two results are apparent and well-supported: 1) almost all species initiate flowering earlier and 2) species flowering in the first half of the season flower on average less than one week longer, whereas species flowering in the latter half of the season flower on average more than 4.5 weeks longer.

In other words, early-season plants start flowering earlier, but many also end earlier. Late season species, on the other hand, start earlier but end later, meaning that they remained in flower for a longer period in 2009–2012 than they did in 1937–1942. This longer average duration of flowering in the latter half of the season is an unexpected result, with unknown ramifications on the biological community.

The plant phenology records during this interval show clear, statistically significant changes to earlier blooming and, for late-season plants, longer duration of blooming. Similarly, the climate data for the period show clear, statistically significant increase in temperature (and, perhaps surprisingly, increase in precipitation as well). At this point, even though it is highly likely to be a cause-and-effect relationship, we can only show greater or lesser correlation between phenology and climate change. Demonstrating causation is more complex and may require considerable additional study.

Read more about this research at **www.mobot.org/climatechange.**



PRAIRIE DAY

Saturday, September 20

Take a step back in time for Prairie Day! Interact with early settlers and explore what life was like on the great American frontier during this bi-annual event. The 250-acre tallgrass prairie provides an authentic backdrop for a day of historical activities, music, and food. Learn more at **www.shawnature.org.**

In Memoriam: Cindy Gilberg



photo courtesy of Gateway Gardener

"The garden is more than a place to cultivate plants—it is a place to share, discover, wonder; to reconnect with ourselves and with nature; and a place to learn. It becomes an experience."

–Cindy Gilberg

The Garden lost a valued colleague, volunteer, Garden member, and friend, Cindy Gilberg, on June 30. Cindy's tenure with the Garden started in 1993 at Shaw Nature Reserve's Native Plant School and Conference. In 2006 she began working in the Whitmire Wildflower Garden, becoming an authority on native landscaping and rain gardens. Cindy was a primary contributor to the Garden's online RainScaping Guide. In 2010 Cindy co-authored *Shaw Nature Reserve: 85 Years of Natural Wonders* with her mother, Barbara Perry Lawton.

Landscapers, horticulturists, and gardeners from the area sought out her expertise, whether at the Garden, through her columns in numerous publications, or at the nursery she owned with her husband, Doug, for nearly 30 years. Her love of nature brought her to us, and we remember her with great affection.

If you'd like to make a tribute gift in Cindy's honor, call (314) 577-5118 or visit **www.mobot.org/tributes**.



More than 90 tons of rock not only give the Bavarian Garden a distinct visual identity but also create well-drained spaces for alpine plants to thrive. (photos by Flannery Allison)

High-Altitute Newcomers

Alpine plants will prove their adaptability in Bavarian Garden

The Garden may be a long way from the German Alps, but with the Floyd Pfautch Bavarian Garden emerging from an extensive renovation this fall, visitors will soon be able to enjoy the diversity of alpine plant life without trekking up a mountain.

Begun in the fall of 2012, the renovations are part of a broad effort led by Vice President of Horticulture and Living Collections Andrew Wyatt to increase the Garden's ability to sustain and display greater biodiversity among its living collections. "Alpine plants are an underrepresented section of the world flora," says Wyatt. "They're an important group of plants to illustrate what would happen with climate change."

Stacks of mountainous boulders, primarily Missouri sandstone, are the most evident additions to the Bavarian Garden landscape. Horticulturists Ben Chu, Jim Cocos, and Julie Hess have installed more than 90 tons of rocks in the garden since the start of the renovations. This rockwork not only gives the garden a distinct visual identity but also creates well-drained planting crevices for alpine plants to thrive.

Plants in alpine regions are particularly sensitive to environmental conditions, according to horticulturist Mariel Tribby, who helped populate the Bavarian Garden this summer. While some plant species may move their range over time to adapt to changes, there are few favorable places for high-altitude alpine plants to go. Environmental changes such as lower precipitation, lack of adequate snowfall, or increases in temperature can threaten their survival (see page 12).

While many of the plants Tribby, Hess, and horticulturist Sophia Warsh have selected for the Bavarian Garden are uncommon in the St. Louis area, these newcomers to the Garden are known for their adaptability. Some, such as *Astragalus angustifolius*, can take on a "cushion" form that allows the plant to trap heat and minimize moisture loss in harsh conditions. Tribby is especially interested to see how these cushion plants perform in the local climate.

The new plants represent an important addition to the Garden's living collections, Wyatt says. Over the next few years, the Garden's horticulturists will learn about the plants' adaptabilities and how they best survive in the St. Louis climate. You can view more images of the Bavarian Garden renovation online at **www.mobot.org/bavariangarden** and see the Garden's unique collection of alpine plant life on display beginning October 2014.



SLU's Director of the Food Innovation and Entrepreneurship Program Steve Jenkins (left) joined the group in planting sweet potatoes at the Kemper Center. (photo by Flannery Allison)

Sowing Social Change

Early this summer, St. Louis youth joined Garden horticulturists and other community partners in planting sweet potatoes in a special section of the William T. Kemper Center for Home Gardening as part of a collaboration with the Sweet Potato Project. "We are pleased to be working in partnership with the Garden," says Sylvester Brown, Jr., director of the project. "Given the expertise and world renowned mission of the garden, we are very grateful to Dr. Peter Wyse Jackson and the Missouri Botanical Garden."

The program, sponsored by the North Area Community Development Corporation, is designed to teach youth urban agriculture and business skills. Students earn a minimum-wage salary to harvest sweet potatoes; develop a product; and learn about packaging, website design, marketing, mass production, and distribution of the product they've created.

Students will harvest the sweet potatoes in the fall for use in baked goods that they'll market and sell in their communities. Look for the sweet potato plot on your next visit to the Kemper Center and learn more about the project at **www.sweetpotatoprojectstl.org**.



Learn more! How about growing your own edible garden? From gardening to nature study and everything in between, there's something for everyone! Registration for fall/winter classes is now open. Visit **www.mobot.org/classes**.



photo by Sheila Voss

Exploring Nature In Our Neighborhood

This summer the Garden convened two region-wide educator summits to explore ways in which educators can incorporate nature-based lessons in their curriculum to help St. Louis become healthier, prosperous, and more resilient to the impacts of climate change.

"Urban biodiversity is not a niche issue. Ultimately, it affects quality of life for us all," says Sheila Voss, Vice President of Education at the Garden. "But in terms of top-of-mind topics, it suffers from niche awareness."

The summits were developed as part of the *BiodiverseCity St. Louis* initiative in partnership with the Academy of Science–St. Louis, Missouri Department of Conservation, the City of St. Louis, and other community partners.

More than 100 educators representing 45 St. Louis-area schools participated, covering topics ranging from the importance of everyday nature experiences to how native-plant rain gardens help reduce storm water management costs.

Get connected with the growing *BiodiverseCity St. Louis* network and learn more at **www.biodiversecitystl.org**.

Events

Member Day: Roses in the River City

Tuesday, September 16; 11 a.m.; Shoenberg Theater

Rosarian David Gunn discusses growing roses in the Midwest. Learn about the plans and care of the Gladney and Lehmann rose gardens. Reservations required and space is limited: (314) 577-5118 or **www.mobot.org/memberevents.**

Member Event: Magical Miniature Gardens

Sunday, September 28; 11 a.m. to 2 p.m.; Butterfly House

Join us at the Butterfly House for miniature garden fun! Learn how to create your own, and have a chance to see professionals at work. Reservations required: (314) 577-5118 **or www.mobot.org/memberevents.**



Best of Missouri Market & More Members-Only Shopping Hour and Breakfast

Saturday, October 4 and Sunday, October 5; 8 to 9 a.m.

Members enjoy breakfast and shop before the crowds. Join or renew your Garden membership at the Market and get in free!

Member Day: October Owls and Orchids

Tuesday, October 14; 11 a.m. and 1 p.m.; Butterfly House

Join the Butterfly House education team for one of two talks and tours about owl butterflies and orchids, and learn special details about both amazing species. Reservations required: (636) 530-0076 ext. 10



Member Event: Ghouls in the Garden

Sunday, October 26; 1 to 3 p.m.

Children in costumes travel the Garden for treats at themed stations. This members-only event is $5 for children ages 3–12 and includes admission to the Doris I. Schnuck Children's Garden. Reservation times: 1 p.m., 1:30 p.m., and 2 p.m. Reservations required: (314) 577-5118 or **www.mobot.org/memberevents.** *Presented by Macy's.*

Member Day: Holiday Decorating

Tuesday, November 11; 11 a.m.; Shoenberg Theater

Experts from Garden Heights Nursery offer tips and demonstrations to decorate your home for the holidays. Reservations required and space is limited: (314) 577-5118 or **www.mobot.org/memberevents.**

Garden Glow Member Preview

Friday, November 21; 5:30 to 9:30 p.m.

Enjoy a special members-only preview of the light exhibit. Timed tickets will be available. Member pricing applies. Get your tickets at **www.mobot.org/memberevents.**

BRING YOUR FRIENDS!

Fest-of-Ale

Friday, October 17; 6 to 9 p.m.

Join the Young Friends of the Garden for the seventh annual Fest-of-Ale. Enjoy offerings from the region's microbreweries, appetizers, and live music by Zigo. $30 members; $40 nonmembers. Prices increase $5 after September 17. Tickets required: (314) 577-5118 or **www.mobot.org/festofale.**

Holiday Wreath Auction

Saturday, November 22–Sunday, January 4, 2015

This exhibit features unique wreath creations that are sold by silent-auction bidding, with proceeds benefiting the Missouri Botanical Garden. Included with Garden admission.

photos by Jill Setlich, Mary Lou Olson, and Claire Cohen

Shop & Dine

Paper Kite Butterfly Sale

September 6 and 13; 9 a.m. to 4 p.m.; Butterfly House Gift Shop

Celebrate the Paper Kite Butterfly Festival with 20% off kites; members receive an additional 10% discount.

Terrarium Tuesdays

Tuesdays, October 1–31; 9 a.m. to 5:30 p.m.; Garden Gate Shop

Every Tuesday in October, learn how to build your own terrarium with our hands-on workshop from 10 a.m. to 1 p.m., and save 20% off terrarium vessels all day long.

October Owls and Orchids Sale

Tuesdays, October 1–31; 4:30 to 7 p.m.; Butterfly House Gift Shop

During the Owls and Orchids Animal Encounters, enjoy 20% off everything in the shop. Members receive an additional 10% discount.

Membership Sale

November 5–9; 9 a.m. to 5 p.m.

Save 20% off the purchase of new or renewing memberships. Current members also receive a 20% discount in the shops throughout the sale.

Holiday Preview Sale

November 15–16; 9 a.m. to 4 p.m.; Butterfly House Gift Shop

Ready for the holidays? Enjoy 20% off everything in the shop. Members receive an additional 10% discount.

Café Flora

Brunch at Spink Pavilion
Sunday mornings in
March through October

www.mobot.org



Around the World Wine Dinner

Travel around the world through a four-course dinner hosted by a wine expert. Third Friday of the month. 6:30 p.m. Reservations required: (314) 577-0200. Learn more at **www.mobot.org/events.**

Children's Garden, tram tours, and Terrace Café will close for the season Sunday, November 2.



SPIRITS IN THE GARDEN

Enjoy after-hours fun and tasty adult beverages from 6 to 9 p.m. every Friday evening in October.

Best of Missouri Market First Look Friday
Friday, October 3

***The Drunken Botanist* Author Amy Stewart**
Friday, October 10

Fest-of-Ale
Friday, October 17

Wicked Plants
Friday, October 24

Creepy Crawl
Friday, October 31

Information and tickets at **www.mobot.org/spirits.**

Garden Gate Shop
4344 Shaw Blvd.
St. Louis, MO 63110
Monday–Sunday
9 a.m. to 5:30 p.m.
(314) 577-5137

Butterfly House Gift Shop
15193 Olive Blvd.
Chesterfield, MO 63017
Tuesday–Sunday
9 a.m. to 4 p.m.
(636) 530-0076 ext. 15

Little Shop Around the Corner
4474 Castleman Ave.
St. Louis, MO 63110
Tuesday–Saturday
10 a.m. to 4 p.m.
(314) 577-0891

The Story of How the Garden Contributes to

Ecological Restoration







When restoring ecosystems, such as a controlled burn in the tallgrass prairies at Shaw Nature Reserve (bottom right), the Garden promotes a sustainable approach by engaging the local communities like it does in Madagascar (left) and Peru (top right).

Our summer issue of the *Bulletin* was devoted to the topic of Ecological Restoration (get the digital copy at **www.mobot.org/bulletin/2014/03_Bulletin_2014.pdf**). In it we defined ecological restoration as the process of assisting a damaged or degraded ecosystem to recover to a self-sustaining state. But that definition has traditionally said little about the role of humans in that effort, nor about their position as active participants in those ecosystems.

At a recent symposium on Ecological Restoration hosted by the Garden, Dr. James Aronson, of the Center for Conservation and Sustainable Development (CCSD), argued that we need more measurable and meaningful outcomes—for people and for nature—and a more holistic picture of what is meant by ecological restoration: one that reestablishes an ecologically healthy relationship between nature and culture. Indeed, the term "natural capital" has been proposed as a way to imbue nature with the same status as other human-centric concepts such as culture, society, prosperity, and others.

Botanical gardens are in a strong position to shape the scope of ecological restoration. We are already working on habitat and ecosystem restoration. We are engaged in public outreach and education close to home and around the world; we cultivate, conserve, and propagate threatened plants; and we collaborate with others involved with conservation and restoration efforts.

But ecological restoration by definition is hands-on. Our goal is to collaborate with local people—in rich and poor regions and countries alike—so that the restoration of ecosystems we all depend on leads to a sustainable and beneficial future for all people. Through the CCSD and other programs at the Garden, we are engaging local communities in areas of ecological degradation as partners in ecological restoration (see photos above). People living in these communities get much-needed employment as well as a voice in the discussion about sustainable land use and management, while in time, the world can enjoy the many benefits of ecological restoration.

Conservation in Action In partnership with IUCN National Committee of the Netherlands, SavingSpecies, and the Helmsley Conservation Trust, the Garden is launching an innovative new forest conservation project in southeast Madagascar that aims to provide gains for both people and biodiversity. To read more about this project, visit **www.mobot.org/restoretheforest**.

photos by Liz Fathman, Rainer Bussmann, and Dan Brown

Tributes

April–June 2014.
A tribute gift is a wonderful way to honor family and friends. As of January 1, 2014, tributes of $50 or more are listed in the *Bulletin*. For more information about giving opportunities at the Garden, please call (314) 577-5118 or make a tribute gift online at **www.mobot.org/tributes**.

In Honor of

Paul and Ann Arenberg
Mr. Steven Arenberg

Mrs. Mary Randolph Ballinger
Mr. and Mrs. Raymond W. Peters II

Mrs. Harriet Baron
Mrs. Martha M. Reichman

Mr. Harold G. Blatt
Mr. and Mrs. Ted Greenberg

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Samantha Miller

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Ms. Julie Ferranti Fitzpatrick

Mrs. Marlene H. Mestres
John Becker
Earciel Canaan
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Mr. and Mrs. Thomas J. Vespa
Ms. Margaret Walling
Ms. Arline Webb

Mr. Joseph H. Mitchell
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Wanda Wright
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Mr. and Mrs. Kenneth Marshall

Members' Entry Court

April–June 2014.
For more information, call (314) 577-5118 or visit **www.mobot.org/donate**.

Signature Bronze Bricks

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Dianne Avery and Beni Levi
Mr. and Mrs. Bryan Burkhart
Ms. Ann Canale
Mr. and Mrs. Jim Doucette
Ms. Ellen Feltner
Deborah M. Garth
Mrs. Anna M. Harris
Mrs. Naomi Jones
Ms. Charlotte W. Krasnoff
Hans and Valerie Levi
Anne Lewis and Family
Mr. Michael McGlaughlin
Mary and Bob McGlaughlin
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Marion Noll
Maury and Mari Pepper
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Peter Bastas

Thomas Beauvais
Mr. Thomas Beauvais

Elvira Fluegel
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Willie and Carrie Stowers
Ms. Annette Stowers

Wilma & Carl Wienold
Family

Mark Zuke
Dr. Jan Zuke

Butterfly House

April–June 2014. Call (314) 577-5118 or visit **www.butterflyhouse.org/donate** to learn more.

Tributes

In Memory of

Diana Losciale
Ms. Jeanie Croope

Mrs. Phyllis Weidenbaum
Mr. and Mrs. John W. Rowe
Dr. and Mrs. Robert L. Kaufman

Pavers

Margie Anderson
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Plaza Interiors- Pam and Sue

Mary Niemann
The Seven Pines Garden Club

Olivia
Ms. Judith Scott and Ms. Laverne Howard

Lorri Powell
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LaVerne Toal
Ms. Kathleen Toal

Creating a Legacy: Henry Shaw's Vision for the Garden Beyond his Lifetime



Most members are aware that the Missouri Botanical Garden began as the vision of Henry Shaw, an Englishman who came to St. Louis in 1819 and made his fortune here. After several trips to Europe, he began to develop plans to turn his country home into a grand garden. Thanks to his own ingenuity and the wise counsel of learned friends, including botanist Dr. George Engelmann, this would not just be a garden of beauty but also a place of science and learning, like the great botanical institutions of Europe.

After much planning, the Missouri Botanical Garden opened to the public in 1859. From the beginning, the Garden combined horticultural display with education and the search for new knowledge. Shaw created this garden—"...a botanical garden easily accessible, which should be forever kept up and maintained...."—as a great gift for St. Louis, his adopted home. His forethought and vision also led to the development of Tower Grove Park, an endowment for Washington University's School of Botany, and other philanthropic endeavors.

Shaw trusted those who followed would steward his legacy and help it grow. His will outlined his plans for these legacy projects and provided the funds to support each one. It still guides the work of the Garden, and his original bequest was the first gift of what would become the Garden's Heritage Society.

For over 150 years, the Garden has made a difference for our visitors, our community, and our planet. It has prospered as a horticultural masterpiece, a world leader in plant science and conservation, and a peerless resource for education about the wonder of the natural world. This remarkable evolution is only possible through ongoing trust, passion, and support of visionaries who continue to make the Garden and its mission a part of their own legacies.

Learn more! You can be a part of the Garden's future by making the Garden part of your legacy. Learn about the different planned giving opportunities by contacting Joyce Pluhar at (314) 577-5199 or **plannedgiving@mobot.org**, or by visiting **www.mobot.org/plannedgiving**.

photo by Tom Incrocci

Heritage Society



photo by Brenda Zanola

Lifelong Connections: Sally Davidson and the Garden Guides

Volunteering at the Missouri Botanical Garden can connect you with the community and create lifelong relationships. Just ask Sally Davidson.

A friend directed Sally to the Garden when she came to St. Louis in 1956, thinking Sally would be interested in learning about the Garden's role in the community and the world. Sally also learned about the Garden Guides—now called Garden Docents—trained volunteers who provide public tours and support special exhibits. She was an enthusiastic candidate and served 20 years as a Garden Guide, engaging people of all ages, backgrounds, and abilities with the beauty and wonder of the Garden.

"We did tours for both children and adults," Sally says. "We worked with a lot of school groups as well. The Climatron was a favorite spot."

Guides were trained to adjust their tours for the interests and needs of visitors. "As an example, the Missouri School for the Blind brought students to the Garden for many years," Sally says. "So they know the Garden. I was assigned to lead a tour for them, but I never gave the tour! Instead, I watched how those with partial sight worked with others to engage them with each flower. They showed me what they could do at the Garden."

Sally introduced visitors to the Garden's new features, including the Ridgway Visitor Center, the William T. Kemper Center for Home Gardening, the Margaret Grigg Nanjing Friendship Chinese Garden, and the Japanese Garden, *Seiwa-en*. "The Japanese Garden is unique because people can experience it in so many ways," Sally says. "You could talk about the history, the beauty of the plants, the teahouse—whatever they were interested in."

Sally also made lasting friendships with her fellow guides. "Oh, I worked with wonderful people," she says. "I retired in 1993, and I got together with a group of them for lunch for years after!"

Sally's three children understand how much her years as a Garden volunteer mean to her. They love to visit the Garden with Sally when they return to St. Louis. One of Sally's grandchildren received a marriage proposal in the Japanese Garden.

These experiences have all contributed to Sally's decision to include the Garden in her estate plans and join the Heritage Society. Sally also recommends volunteering to everyone. "Volunteering at the Garden is a great way to connect with the community and form lifelong friendships. And that's how you become devoted."

Create Your Own Connections with the Heritage Society

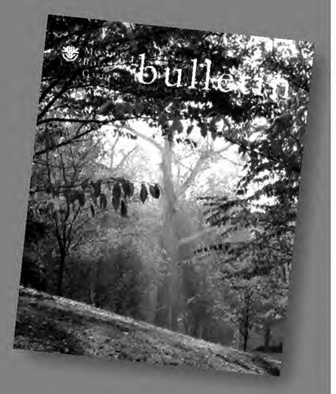
The Heritage Society of the Missouri Botanical Garden recognizes those who plan to support the Garden beyond their lifetimes. In addition to thanking members for their support, the Garden hosts special events for Heritage Society members to connect with one another, create new memories, and share stories.

Heritage Society events include special behind-the-scenes tours and presentations; brunches, lunches, and receptions; and family events.

To learn more about joining the Heritage Society, please contact Joyce Pluhar at (314) 577-5199 or **joyce.pluhar@mobot.org** to discuss how your gift can help shape the Garden's future. You can also learn more by visiting **www.mobot.org/plannedgiving**.

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greener tomorrow

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The Missouri Botanical Garden strives to make the most sustainable choices possible to benefit people, plants, and the planet. That's why we offer the *Bulletin* as a downloadable PDF for viewing onscreen on your computer. Sign up for the new online version by sending an email to **membership@mobot.org**. Let us know if you'd like to forego your paper subscription to save trees.

You can also send an email to **membership@mobot.org** if:

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Join or renew at the event and get in for FREE!

photo by Jill Setlich

bulletin calendar

September | October | November



Prairie Day
September 20
at Shaw Nature Reserve

Experience prairie heritage, fun-filled family activities, great food, and more!

www.shawnature.org

Booterflies
October 25
at the Butterfly House

www.butterflyhouse.org



Green Ball
November 14

www.mobot.org/greenball

Presented by Moonrise Hotel

Garden Glow
November 22, 2014 to January 3, 2015

www.mobot.org/glow

Presented by WELLS FARGO ADVISORS



www.mobot.org/events



JAPANESE FESTIVAL
AUGUST 30 – SEPTEMBER 1

Sponsorship by Nidec Motor Corporation, Novus International, and TOYOTA Bodine

www.mobot.org/japanesefestival



Spirits in the Garden

Enjoy tasty botanical-based drinks and fall-themed fun for adults every Friday night in October.

Best of Missouri Market First Look Friday
Friday, October 3

***The Drunken Botanist* Author Amy Stewart**
Friday, October 10

Fest-of-Ale
Friday, October 17

Wicked Plants
Friday, October 24

Creepy Crawl
Friday, October 31

www.mobot.org/spirits



Best of Missouri Market & More
October 3–5

www.mobot.org/bestofmomarket

Shaw Wildflower Market
September 5
at Shaw Nature Reserve



www.shawnature.org



Doris I. Schnuck
Children's Garden Seasonal Closing
November 1–2

www.mobot.org/events

MEMBERSHIP SALE
November 5–9

Enjoy 20% off new, renewed, or gift memberships. Plus, get a 20% discount at the shops. Visit the Memership Service Desk, call (314) 577-5118, or visit **www.mobot.org/membership**.

September 2014

average temperature: low 61°, high 81°
average precipitation: 3.4 in.

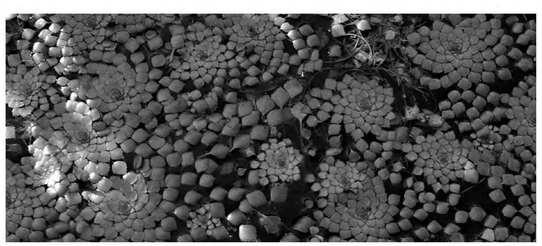
What's in bloom?


Pigeon berry


Chinese hibiscus


Sweet coneflower

8/30–9/1	**Japanese Festival** *Sponsorship support by Nidec Motor Corporation, Novus International, Inc., and TOYOTA Bodine.* August 30: 10 a.m. to 8 p.m. $ August 31: 10 a.m. to 8 p.m. $ September 1 (Labor Day): 10 a.m. to 5 p.m. $
9/1	**Labor Day**
9/2	Butterfly House open Tuesday–Sunday, 9 a.m. to 4 p.m. *through Memorial Day 2015.*
9/5	Shaw Wildflower Market $ SNR
9/6	Paper Kite Butterfly Festival, 9 a.m. to 4 p.m., BH
9/7	**Grandparents Day**
9/7	Corporate Partners Day, 9 a.m. to 5 p.m.
9/7	Grandparents Day Celebration: Free activities for children and families, noon to 4 p.m. *Sponsored by Essence Healthcare.*
9/13	Paper Kite Butterfly Festival, 9 a.m. to 4 p.m., BH
9/16	Member Day: Roses in the River City, 11 a.m. to noon ☎ ST
9/19–9/22	Spring Bulb Sale, 9 a.m. to 5 p.m. GGS
9/20	Prairie Day, 10 a.m. to 4 p.m. $ SNR
9/25	**Rosh Hashanah**
9/28	Member Event: Magical Miniature Gardens, 11 a.m. to 2 p.m. ☎ BH



$5 OFF

Any $25 garden tools purchase.
GET YOUR GARDEN READY FOR WINTER!

Not valid with any other coupons or sales except membership discount. One coupon per customer. Expires 11/30/2014. See shop for details.

GARDEN GATE SHOP

October 2014

average temperature: low 50°, high 69°
average precipitation: 3.4 in.

What's in bloom?


Japanese anemone


Indian blanket


Canary sea daffodil

10/1–10/31	October Owls and Orchids, Tuesday–Sunday, 9 a.m. to 4 p.m. BH Owls and Orchids Animal Encounters, Tuesdays in October, 4:30 to 7 p.m. $ BH
10/3–10/5	**Best of Missouri Market & More** October 3: First Look Friday, 6 to 9 p.m. $ October 4: Members-Only Shopping Hour and Breakfast, 8 to 9 a.m. October 4: 9 a.m. to 5 p.m. $ October 5: Members-Only Shopping Hour and Breakfast, 8 to 9 a.m. October 5: 9 a.m. to 6 p.m. $
10/3–10/5	Members Shopping Day 20% Discount, 9 a.m. to 5 p.m. GGS
10/4	**Yom Kippur**
10/4	**Eid-al-Adha**
10/10	Spirits in the Garden: *The Drunken Botanist* Author Amy Stewart, 6 to 9 p.m. $
10/13	**Columbus Day**
10/14	Member Day: October Owls and Orchids, 11 a.m. and 1 p.m. ☎ BH
10/17	Fest-of-Ale, 6 to 9 p.m. $
10/23	**Diwali**
10/24	**Islamic New Year**
10/24	Spirits in the Garden: Wicked Plants, 6 to 9 p.m. $
10/25	Booterflies Halloween Party, 5 to 7 p.m., ☎ $ BH
10/26	Member Event: Ghouls in the Garden, 1 to 3 p.m. ☎ $ *Presented by Macy's.*
10/31	Spirits in the Garden: Creepy Crawl, 6 to 9 p.m. $
10/31	**Halloween**



November 2014

average temperature: low 39°, high 56°
average precipitation: 4.2 in.

What's in bloom?


Blue star


Orange


Autumn crocus

11/1–11/2	Doris I. Schnuck Children's Garden Seasonal Closing Weekend, 9 a.m. to 3 p.m. $ CHD
11/4	**Election Day**
11/5–11/9	Membership Sale: 20% off new, gift, and renewed memberships
11/5–11/9	Members' 20% Sale at the shops. GGS, BH, LS
11/10	**World Science Day**
11/11	**Veterans Day**
11/11	Member Day: Holiday Decorating, 11 a.m. to noon ☎ ST
11/14	Fifth Annual Green Ball, 7 to 11 p.m. ☎ $ Moonrise Hotel *Presented by Moonrise Hotel.*
11/21	Garden Glow Member Preview, 5:30 to 9:30 p.m. ☎ $
11/22–1/3	Garden Glow, 5:30 to 9:30 p.m.
11/22–1/4	Gardenland Express, 9 a.m. to 5 p.m.
11/22–1/4	Victorian Christmas at Tower Grove House, 10 a.m. to 5 p.m.
11/22–1/4	Holiday Wreath Auction, 9 a.m. to 5 p.m. RVC
11/27	**Thanksgiving Day**



Don't forget!



LAST WEEKS
Nature Connects: Art with LEGO® Bricks
Now through September 7
Don't miss your chance to explore larger-than-life plant and animal sculptures.
For more information, visit **www.mobot.org/natureconnects.**



Member Event: Ghouls in the Garden
Sunday, October 26
Children in costumes travel the Garden for treats at themed stations. Reservations required: (314) 577-5118 or **www.mobot.org/memberevents.**

Presented by Macy's.



Plant Societies Shows and Sales
Get the latest information about your favorite plant society's show and sale by visiting **www.mobot.org/plantsocieties.**

KEY (All events take place at the Garden unless otherwise noted.)

BH	Butterfly House	KC	Kemper Center for Home Gardening
BHGS	Butterfly House Gift Shop	LS	Little Shop Around The Corner
CA	Cohen Amphitheater	MC	Monsanto Center
CBEC	Commerce Bank Center for Science Education	MH	Monsanto Hall (in RVC)
CHD	Children's Garden	RVC	Ridgway Visitor Center
CL	Climatron lawn	SNR	Shaw Nature Reserve
GGS	Garden Gate Shop	SP	Spink Pavilion
JE	Jordan Education Wing (in RVC)	ST	Shoenberg Theater (in RVC)

	Sassafras
	Members-only event
	20% Member discount at the shops
☎	Reservations required
$	Fee required

photos by (front) Chris Norton, Heather Marie Osborn, Jonathan Knobelock, Lauren Kirkwood, Josh Nezam, Christopher Gibbons, Jill Setlich, and Kimberly Bretz. (this page) Lisa Francis, Jill Setlich, JJ Mueller, Josh Nezam, Mary Lou Olson, and Kevin Kersting.